HP Moonshot 1500 Chassis Setup and Installation Guide

Abstract

This document contains setup, installation, and configuration information for the HP Moonshot System. This document is for the person who installs, administers, and troubleshoots the HP Moonshot System. HP assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.

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Planning the installation

Safety and regulatory compliance

For safety, environmental, and regulatory information, see *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at the HP website (http://www.hp.com/support/Safety-Compliance-EnterpriseProducts).

Site requirements

Select an installation site that meets the detailed installation site requirements described in the *HP Moonshot System Site Planning Guide* in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

Software prerequisites

Before setting up and configuring the HP Moonshot System, be prepared to do the following:

- Obtain a supported operating system. For information about operating systems supported by the Moonshot System, see the operating system support matrices (http://www.hp.com/go/supportos).
- For deployment procedures, see operating system deployment documentation in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).
- Prepare to update firmware and system software components using HP Moonshot Component Pack.

  HP Moonshot Component Pack is a comprehensive firmware solution tested on the HP Moonshot System and delivered as a compressed file. The compressed file includes all the component files needed to update a Moonshot System. Users deploy the firmware updates contained in the Moonshot Component Pack from a command line by using the iLO Chassis Manager CLI or HP Moonshot-45G/180G Switch Module CLI, or by using the included HP Smart Update Manager. Download the latest pack from the HP website (http://www.hp.com/go/moonshot/download).

For a complete list of Moonshot System documentation, see the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

Determine power and cooling configurations

Validate power and cooling requirements based on location and installed components. For more information, see the *HP Moonshot System Configuration and Compatibility Guide* in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

Power requirements

Installation of this equipment must comply with local and regional electrical regulations governing the installation of IT equipment by licensed electricians. This equipment is designed to operate in installations

covered by NFPA 70, 1999 Edition (National Electric Code) and NFPA-75, 1992 (code for Protection of Electronic Computer/Data Processing Equipment). For electrical power ratings on options, refer to the product rating label or the user documentation supplied with that option.

⚠ **WARNING:** To reduce the risk of personal injury, fire, or damage to the equipment, do not overload the AC supply branch circuit that provides power to the rack. Consult the electrical authority having jurisdiction over wiring and installation requirements of your facility.

⚠ **CAUTION:** Protect the chassis from power fluctuations and temporary interruptions with a regulating UPS. This device protects the hardware from damage caused by power surges and voltage spikes and keeps the chassis in operation during a power failure.

HP Advanced Power Manager

HP APM is a point of contact for system administration.

To install, configure, and access HP APM, see the *HP ProLiant SL Advanced Power Manager User Guide* in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

Hot-plug power supply calculations

For hot-plug power supply specifications and calculators to determine electrical and heat loading for the HP Moonshot System, see the HP Power Advisor on the HP website (http://www.hp.com/go/hppoweradvisor).

Compiling the documentation

The documentation, while delivered individually and in various formats, works as a system. Consult these documents before attempting installation. These documents provide required important safety information and decision-making steps for configuration.

The HP Moonshot System information can be found in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs):

- *Quick Deploy Rail System Installation Instructions*
- *HP Moonshot System Site Planning Guide*
- *HP Moonshot iLO Chassis Management CLI User Guide*
- Links to all related documentation
- Videos

Warnings and cautions

⚠ **WARNING:** To reduce the risk of personal injury or damage to equipment, heed all warnings and cautions throughout the installation instructions.

WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:

- The rack is bolted to the floor using the concrete anchor kit.
- The leveling feet extend to the floor.
- The full weight of the rack rests on the leveling feet.
- The racks are coupled together in multiple rack installations.
- Only one component is extended at a time. If more than one component is extended, a rack might become unstable.

WARNING: The chassis is very heavy. To reduce the risk of personal injury or damage to the equipment, do the following:

- Observe local occupational health and safety requirements and guidelines for manual material handling.
- Get help to lift and stabilize the product during installation or removal, especially when the product is not fastened to the rails. The chassis weighs more than 81.65 kg (180.00 lb), so at least four people must lift the chassis into the rack together. An additional person may be required to help align the chassis if the chassis is installed higher than chest level.

WARNING: To reduce the risk of personal injury or damage to the equipment, you must adequately support the chassis during installation and removal.

WARNING: Be sure to install the chassis starting from the bottom of the rack, and then work your way up the rack.

WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

WARNING: To reduce the risk of electric shock or damage to the equipment:

- Never reach inside the chassis while the system is powered up.
- Perform service on system components only as instructed in the user documentation.

CAUTION: Always be sure that equipment is properly grounded and that you follow proper grounding procedures before beginning any installation procedure. Improper grounding can result in ESD damage to electronic components. For more information, refer to "Electrostatic discharge (on page 49)."

CAUTION: When performing non-hot-plug operations, you must power down the chassis and/or the system. However, it may be necessary to leave the chassis powered up when performing other operations, such as hot-plug installations or troubleshooting.

Space and airflow requirements

To enable servicing and ensure adequate airflow, observe the following spatial requirements when deciding where to install a rack:

- Leave a minimum clearance of 121.9 cm (48.0 in) in front of the rack.
- Leave a minimum clearance of 76.2 cm (30.0 in) in back of the rack.
- Leave a minimum clearance of 121.9 cm (48.0 in) from the back of the rack to the rear of another rack or row of racks.

HP rack products draw cool air in through the front and expel warm air through the rear of the enclosure. Therefore, the front of the rack enclosure must be adequately ventilated to enable ambient room air to enter the enclosure, and the rear of the enclosure must be adequately ventilated to enable the warm air to escape from the enclosure.

IMPORTANT: Do not block the ventilation openings.

If the front of the rack is not completely filled with components, the remaining gaps between the components can cause changes in the airflow, which can adversely affect cooling within the rack. Cover these gaps with blanking panels.

CAUTION: Always use blanking panels to fill empty vertical spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

Racks provide proper server cooling from flow-through perforations in the front and rear doors that provide a 65% open area for ventilation.

Temperature requirements

To ensure continued safe and reliable equipment operation, install or position the rack in a well-ventilated, climate-controlled environment.

The operating temperature inside the rack is always higher than the room temperature and is dependent on the configuration of equipment in the rack. Check the TMRA for each piece of equipment before installation.

CAUTION: To reduce the risk of damage to the equipment when installing third-party options:

- Do not permit optional equipment to impede airflow around the chassis or to increase the internal rack temperature beyond the maximum allowable limits.
- Do not exceed the manufacturer's TMRA.

Grounding requirements

This equipment must be grounded properly for proper operation and safety. In the United States, you must install the equipment in accordance with NFPA 70, 1999 Edition (National Electric Code), Article 250, as well as any local and regional building codes.

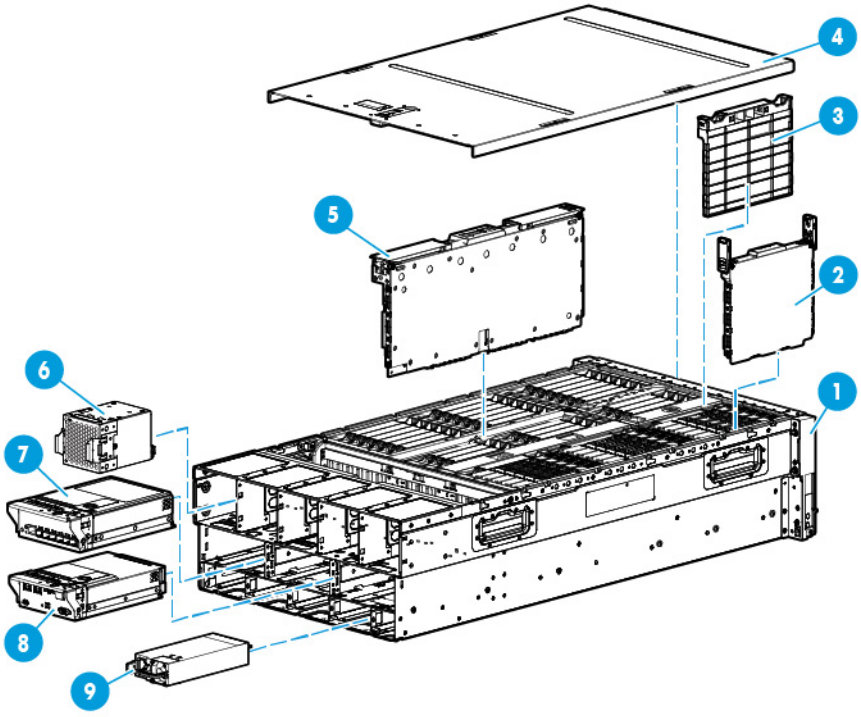
In Canada, you must install the equipment in accordance with Canadian Standards Association, CSA C22.1, Canadian Electrical Code.

In all other countries, you must install the equipment in accordance with any regional or national electrical wiring codes, such as the International Electrotechnical Commission (IEC) Code 364, parts 1 through 7. Furthermore, you must be sure that all power distribution devices used in the installation, such as branch wiring and receptacles, are listed or certified grounding-type devices.

Because of the high ground-leakage currents associated with this equipment, HP recommends the use of a PDU that is either permanently wired to the building's branch circuit or includes a nondetachable cord that is wired to an industrial-style plug. NEMA locking-style plugs or those complying with IEC 60309 are considered suitable for this purpose. Using common power outlet strips to supply power to this equipment is not recommended.

Identifying components and LEDs

HP Moonshot System components



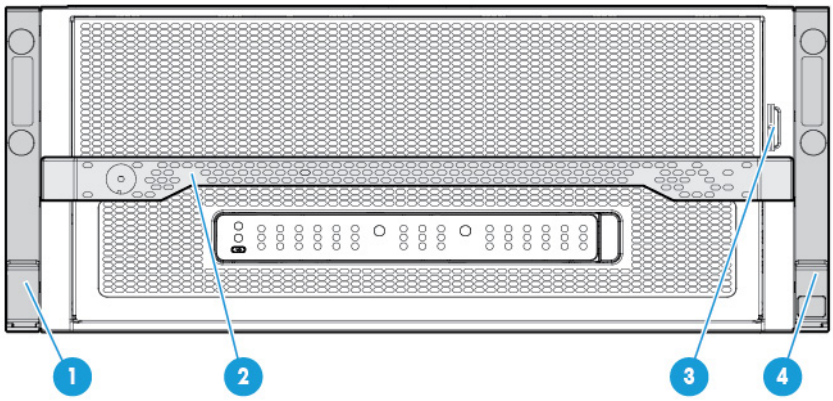
Item	Description
1	HP Moonshot 1500 Chassis
2	Cartridges*
3	Cartridge blank*
4	Access panel
5	Switch module*
6	Fans (5)
7	Uplink module*
8	Moonshot 1500 CM module
9	Power supplies*

* The quantity depends on the configuration ordered.

The following documents also ship with the Moonshot System:

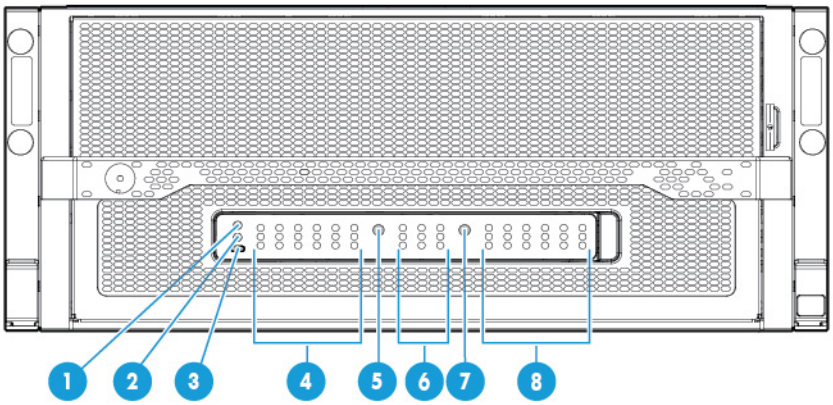
- *Start Here for Important Setup Information*
- *Safety, Compliance, and Warranty Information*

Chassis front panel components



Item	Description
1	Bezel ear
2	Backplane assembly release lever
3	Serial label pull tab
4	Bezel ear

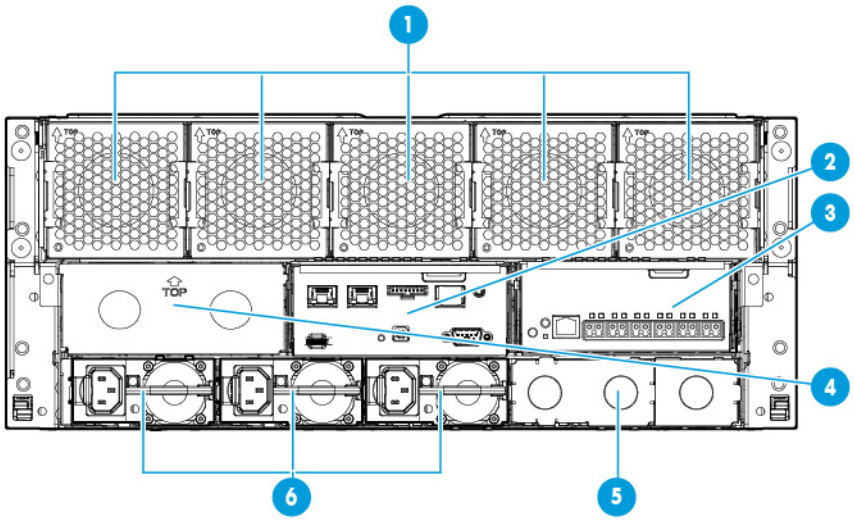
Chassis front panel LEDs and buttons



Item	Description	LED Status
1	Chassis power LED	Flashing Green = The chassis is waiting to power on. Green = Normal operation Amber = Standby operation Off = No power
2	Chassis health LED	Green = Normal operation Flashing Amber = Degraded condition Flashing Red = Critical condition Off = No power
3	Chassis UID LED/button	Blue = Chassis ID is selected. Flashing blue = System firmware update is in process. Off = Chassis ID is not selected.

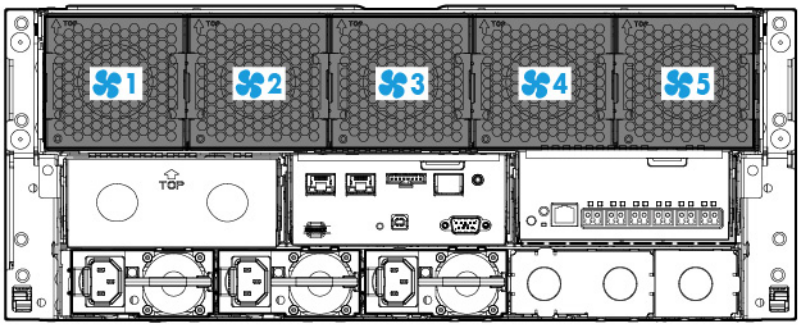
Item	Description	LED Status
4	Cartridge health LEDs	Green = Normal operation Amber = Standby mode Flashing Amber = Degraded condition Flashing Amber (All) = Moonshot 1500 CM module is not installed. Flashing Red = Critical condition Off = Cartridge is not installed or no power exists.
5	Switch module A health LED	Green = Normal operation Flashing Amber = Degraded condition Flashing Red = Critical condition Off = Switch module is not installed or no power exists.
6	Switch module B health LED	Green = Normal operation Flashing Amber = Degraded condition Flashing Red = Critical condition Off = Switch module is not installed or no power exists.

Chassis rear panel components

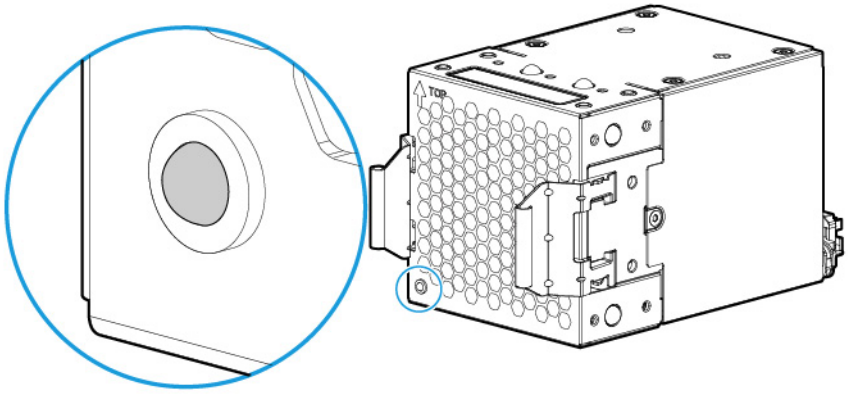


Item	Description
1	Fans (5)
2	Moonshot 1500 CM module
3	Uplink module A
4	Uplink module B (blank installed)
5	Power supplies
6	Power supply blank

Fan bay numbering

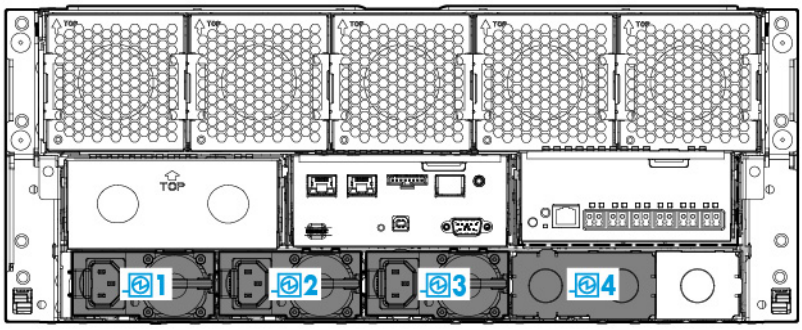


Fan LED

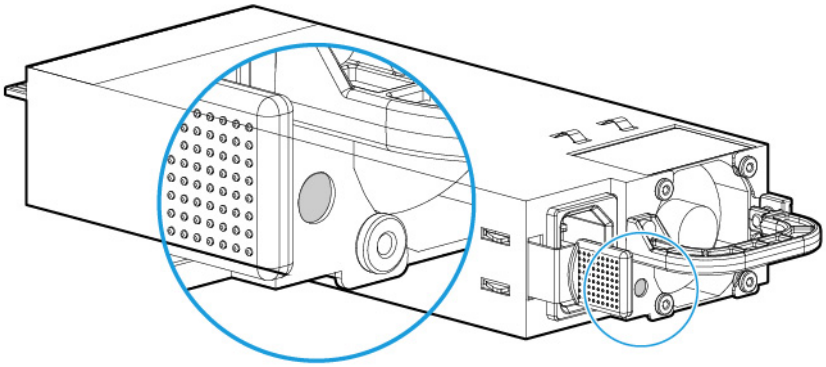


Status	Description
Off	The fan is working or the power is off.
Solid amber	The fan has failed.

Power supply bay numbering

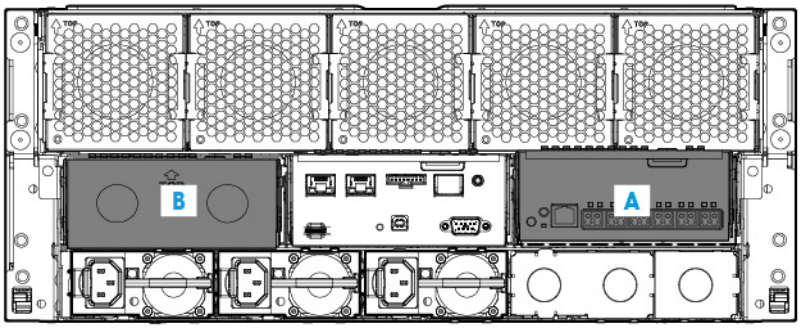


Power supply LED

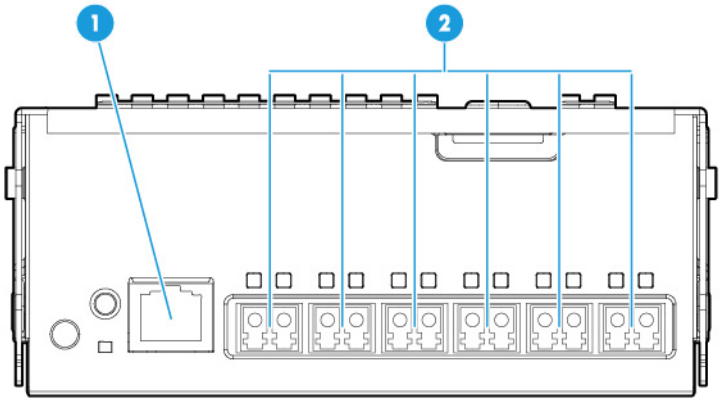


Status	Description
Off	• No AC power to power supply units. Check the AC power cord. • AC is present. Standby output is on; output is disabled. • Power supply failure (includes overvoltage and overtemperature)
Green	AC is present and main 12 V output is enabled.

Uplink module bay identification



Moonshot-6SFP Uplink Module components



Item	Component	Description
1	Serial console port	For management
2	SFP+ ports X1–X6	1Gb or 10Gb Ethernet

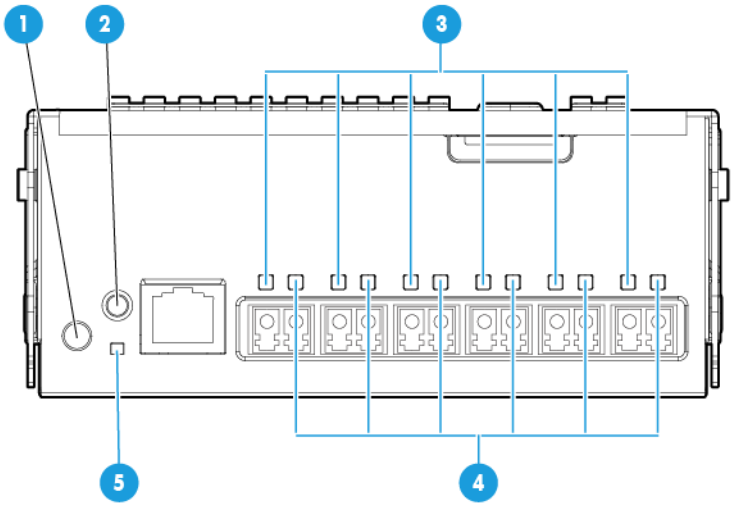
SFP+ ports X1 through X6 support Ethernet traffic only.

SFP+ ports support the following pluggable Ethernet transceiver modules:

- HP 1000BASE-T SFP
- HP 10GBASE-SR SFP+
- HP 10GBASE-DAC SFP+

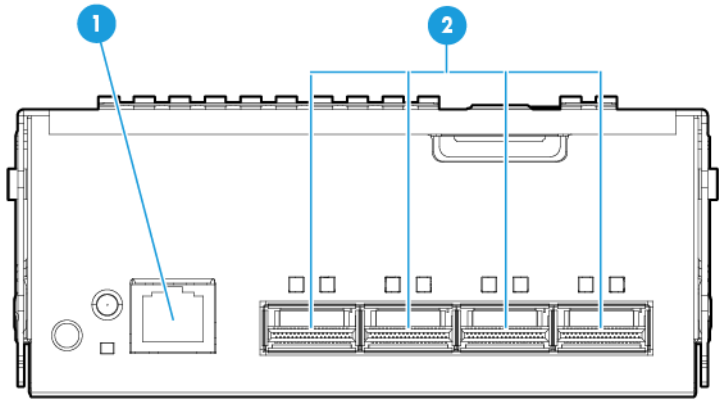
Any available port can be used to connect to the data center. Ensure the port is populated with supported HP transceiver modules that are compatible with the data center port type.

Moonshot-6SFP Uplink Module LEDs and buttons



Item	Description	Status
1	Uplink module UID LED/button	Solid blue = Switch module ID is selected. Flashing blue = Switch module firmware update is in progress. Off = Switch module ID is not selected.
2	Uplink module health LED	Green = Normal operation Flashing amber = Degraded condition Flashing red = Critical condition Off = No power
3	Uplink module link LED	Solid green = Link Off = No link
4	Uplink module activity LED	Flashing green = Activity Off = No activity
5	Reset button	Resets the switch module

Moonshot-4QSFP+ Uplink Module components



Item	Component	Description
1	Serial console port	For management
2	QSFP+ ports Q1–Q4	40Gb Ethernet

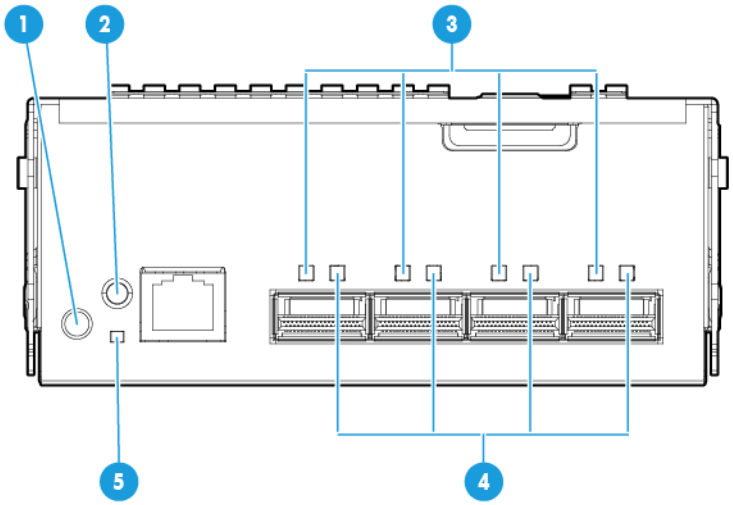
QSFP+ ports Q1 through Q4 support Ethernet traffic only.

QSFP+ ports support the following pluggable Ethernet transceiver modules:

- HP 40GBASE QSFP+
- HP 40GBASE QSFP+ SR4
- HP 40GBASE QSFP+ DAC
- HP 40GBASE QSFP+ to 4x10G SFP+

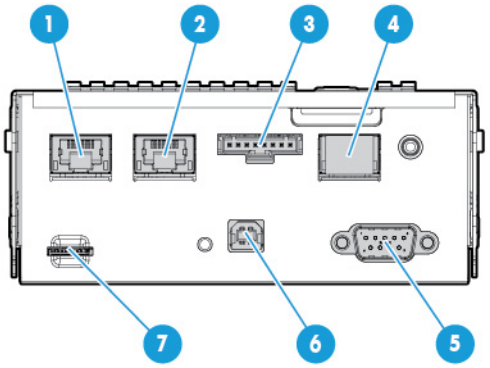
Any available port can be used to connect to the data center. Ensure the port is populated with supported HP transceiver modules that are compatible with the data center port type.

Moonshot-4QSFP+ Uplink Module LEDs and buttons



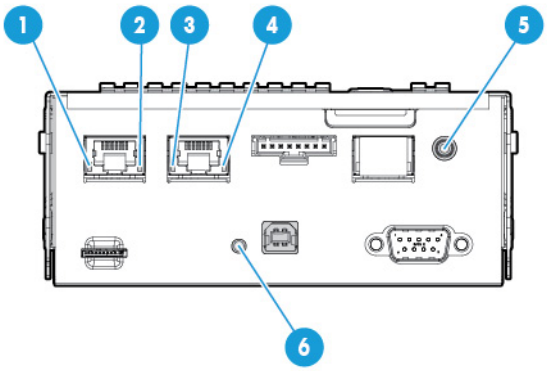
Item	Description	Status
1	Uplink module UID LED/button	Solid blue = Switch module ID is selected. Flashing blue = Switch module firmware update is in progress. Off = Switch module ID is not selected.
2	Uplink module health LED	Green = Normal operation Flashing amber = Degraded condition Flashing red = Critical condition Off = No power
3	Uplink module link LED	Solid green = Link Off = No link
4	Uplink module activity LED	Flashing green = Activity Off = No activity
5	Reset button	Resets the switch module

HP Moonshot 1500 Chassis Management module components



Item	Description	Label
1	iLO CM management port	iLO/MGMT
2	iLO CM link port (disabled by default)	LINK
3	Moonshot 1500 CM module HP APM port	RCM
4	Moonshot 1500 CM module diagnostic port	DEBUG
5	iLO CM management serial port	—
6	Moonshot 1500 CM module USB connector	—
7	Moonshot 1500 CM module MicroSD slot	—

HP Moonshot 1500 Chassis Management module LEDs and buttons



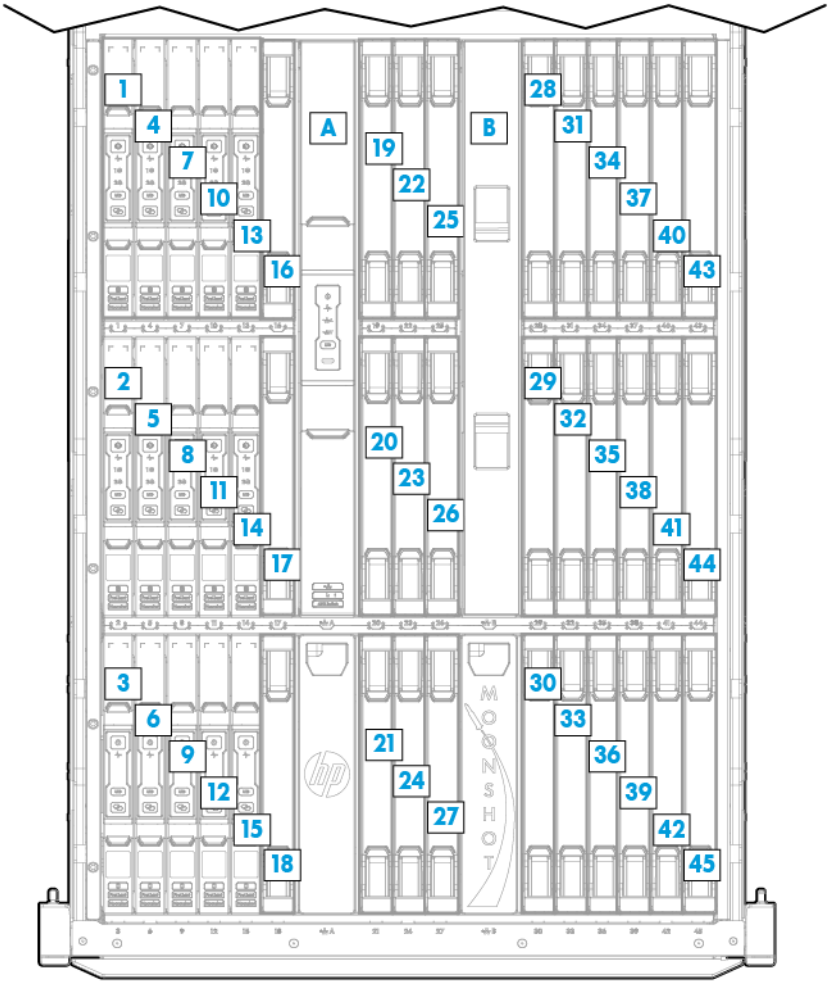
Item	Description	Label
1	iLO CM management port link LED	iLO/MGMT
2	iLO CM management port activity LED	iLO/MGMT
3	iLO CM link port link LED	LINK
4	iLO CM link port activity LED	LINK
5	Moonshot 1500 CM module UID LED/button	—
6	Moonshot 1500 CM module health LED	—

Chassis internal components

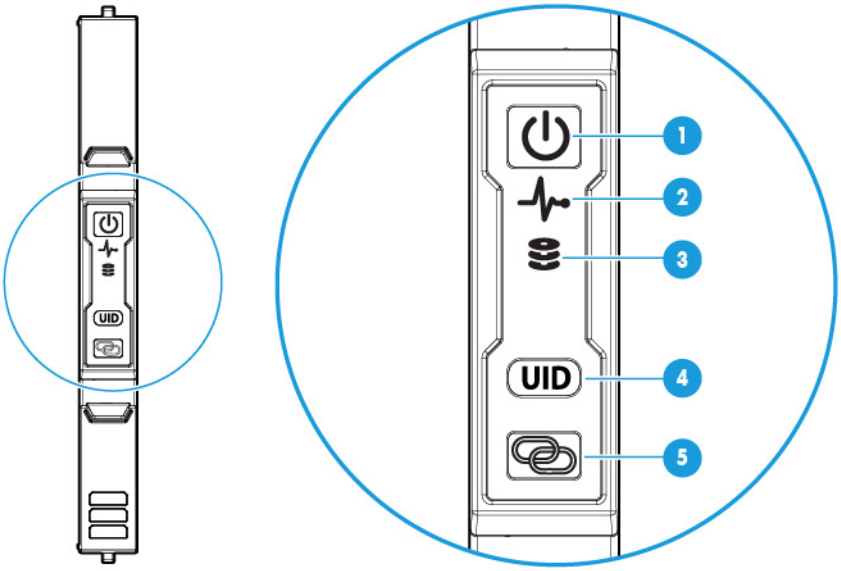
Up to 45 cartridges and two switch modules can be installed in the HP Moonshot 1500 Chassis.

Cartridge slot and switch module bay identification

The chassis provides 45 cartridge slots (1-45) and two switch module bays (A-B).



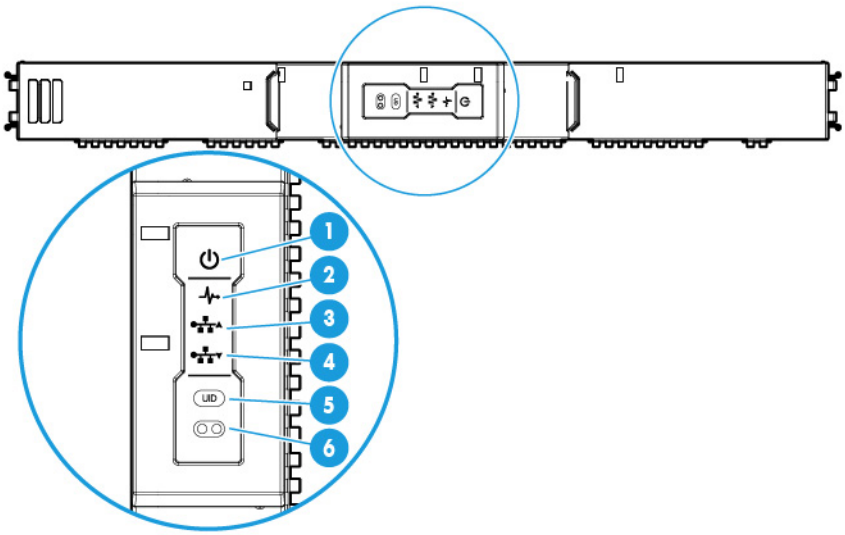
Cartridge LEDs and buttons



Item	Description	Status
1	Cartridge power LED/button	Green = Normal operation Amber = Standby operation Off = No power
2	Cartridge health LED	Green = Normal operation Flashing amber = Degraded condition Flashing red = Critical condition Off = No power
3	Drive LED*	Green = Activity Off = No activity
4	Cartridge UID LED/button	Blue = Cartridge ID is selected. Flashing blue = Cartridge firmware update is in progress. Off = Cartridge ID is not selected.
5	Cartridge link LED/button**	Flashing white = Cartridges are linked. Off = Cartridge is not linked to other cartridges.

* Depending on the cartridge installed, there might be 0, 1, or 2 drive LEDs.
** The cartridge link LED flashes for 10 seconds after the link button is pressed.

Switch module button, sensor, and LEDs



Item	Description	Status
1	Switch module power LED	Green = Normal operation Amber = Standby operation Off = No power
2	Switch module health LED	Green = Normal operation Flashing amber = Degraded condition Flashing red = Critical condition Off = No power
3	Switch module uplink activity LED	Green = Link Flashing green = Activity Off = No activity
4	Switch module downlink activity LED	Green = Link Flashing green = Activity Off = No activity
5	Switch module UID LED/button	Solid blue = Switch module ID is selected. Flashing blue = Switch module firmware update is in progress. Off = Switch module ID is not selected.
6	Access panel sensor	Detects the presence of the access panel*

*The fan speed adjusts automatically when the access panel is installed or removed.

Installing the chassis

Installation overview

To set up and install the chassis:

1. Unpack the Moonshot System ("Unpacking the HP Moonshot System" on page 21).
2. Determine the chassis rack spacing ("Determining the chassis rack spacing" on page 21).
3. Install the rack rails ("Installing the rack rails" on page 21).
4. Install the chassis in the rack ("Installing the chassis in the rack" on page 21).
5. Install the blanking panel ("Installing the blanking panel" on page 25).
6. Install Moonshot System components ("Installing HP Moonshot System components" on page 26).

Unpacking the HP Moonshot System

Unpack the following hardware and prepare for installation:

- HP Moonshot System
- Accessory kit
- Quick Deploy Rail System Kit
- Blanking panel

Determining the chassis rack spacing

Up to seven chassis can be installed in a 36U, 1200-mm (47.24-in) deep rack. If installing more than one chassis, install the first chassis in the bottom of the rack, and then install additional chassis by moving up the rack with each subsequent chassis.

Due to the height of the Moonshot 1500 Chassis, chassis installation requires either the use of a rack rail adapter kit or a blanking panel. If you ordered a rack rail adapter kit to be installed at the factory, then the blanking panel is not required. If the rack rail adapter kit was not installed, then install the blanking panel directly above the chassis. For more information, see "Installing the blanking panel (on page 25)."

Installing the rack rails

The chassis requires installation in a rack. To install the rack rails, see the *Quick Deploy Rail System Installation Instructions* that ship with the Quick Deploy Rail System kit.

Installing the chassis in the rack

⚠ **WARNING:** The chassis is very heavy. To reduce the risk of personal injury or damage to the equipment, do the following:

- Observe local occupational health and safety requirements and guidelines for manual material handling.
- Get help to lift and stabilize the product during installation or removal, especially when the product is not fastened to the rails. The chassis weighs more than 81.65 kg (180.00 lb), so at least four people must lift the chassis into the rack together. An additional person may be required to help align the chassis if the chassis is installed higher than chest level.

⚠ **WARNING:** To avoid risk of personal injury or damage to the equipment, do not stack anything on top of rail-mounted equipment or use it as a work surface when extended from the rack.

⚠ **WARNING:** To reduce the risk of personal injury or damage to the equipment, be sure that:

- The rack is bolted to the floor using the concrete anchor kit.
- The leveling feet extend to the floor.
- The full weight of the rack rests on the leveling feet.
- The racks are coupled together in multiple rack installations.
- Only one component is extended at a time. If more than one component is extended, a rack might become unstable.

⚠ **WARNING:** To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before installing the chassis.

⚠ **CAUTION:** Always plan the rack installation so that the heaviest item is on the bottom of the rack. Install the heaviest item first, and continue to populate the rack from the bottom to the top.

⚠ **CAUTION:** Be sure to keep the product parallel to the floor when installing the chassis. Tilting the product up or down could result in damage to the slides.

⚠ **CAUTION:** HP has not tested or validated the HP Moonshot 1500 Chassis with any third-party racks. Before installing the HP Moonshot 1500 Chassis in a third-party rack, be sure to properly scope the limitations of the rack. Before proceeding with the installation, consider the following:

- You must fully understand the static and dynamic load carrying capacity of the rack and be sure that it can accommodate the weight of the HP Moonshot 1500 Chassis.
- Be sure sufficient clearance exists for cabling, installation and removal of the chassis, and actuation of the rack doors.

Due to the height of the chassis, you are required to use one of the following when installing the chassis:

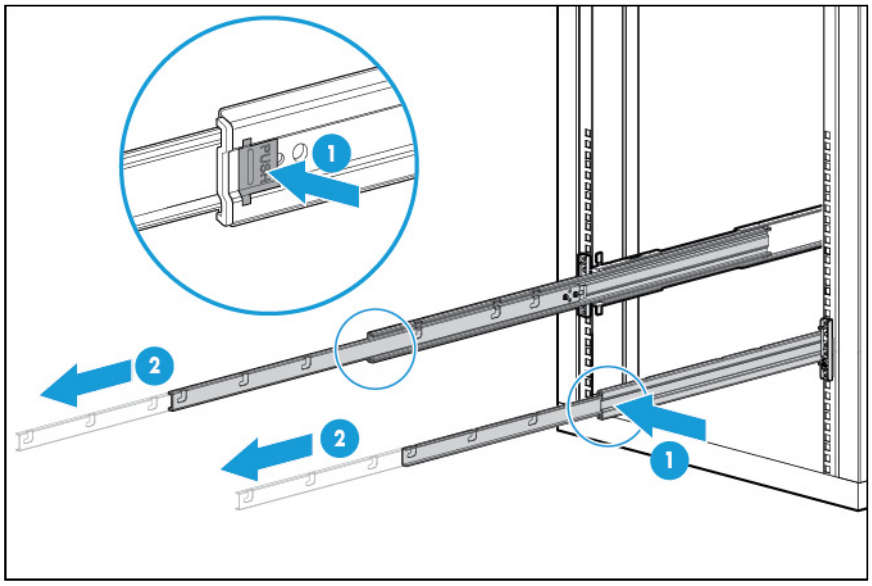
- Rack rail adapter kit
- Blanking panel

For more information, see "Determining the chassis rack spacing (on page 21)."

To install the chassis:

⚠ **WARNING:** To reduce the risk of personal injury or damage to the equipment, you must fully extend the rails. To fully extend the rails, press the push tabs and extend the rails until the rails click twice.

1. Fully extend the rails by pressing the push tabs and extending the rails until the rails click two times.

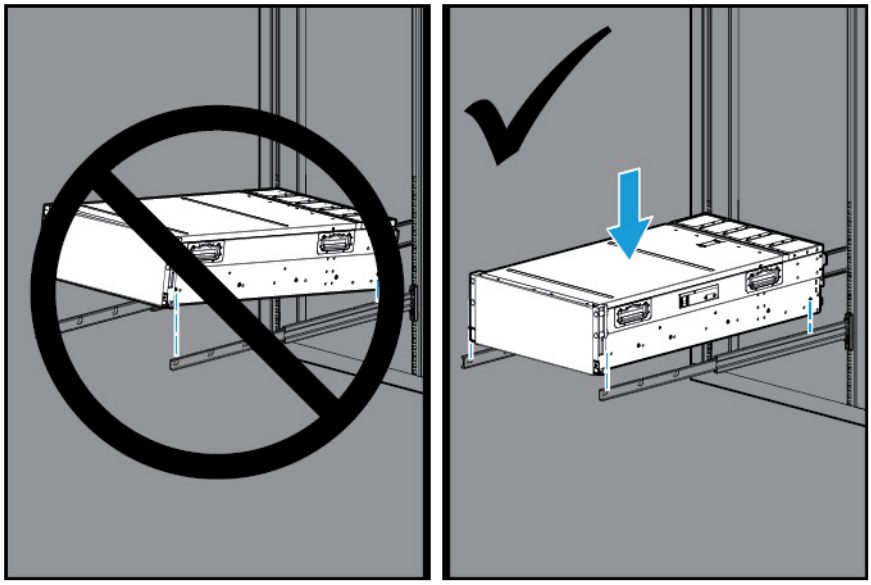


WARNING: To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before installing the chassis.

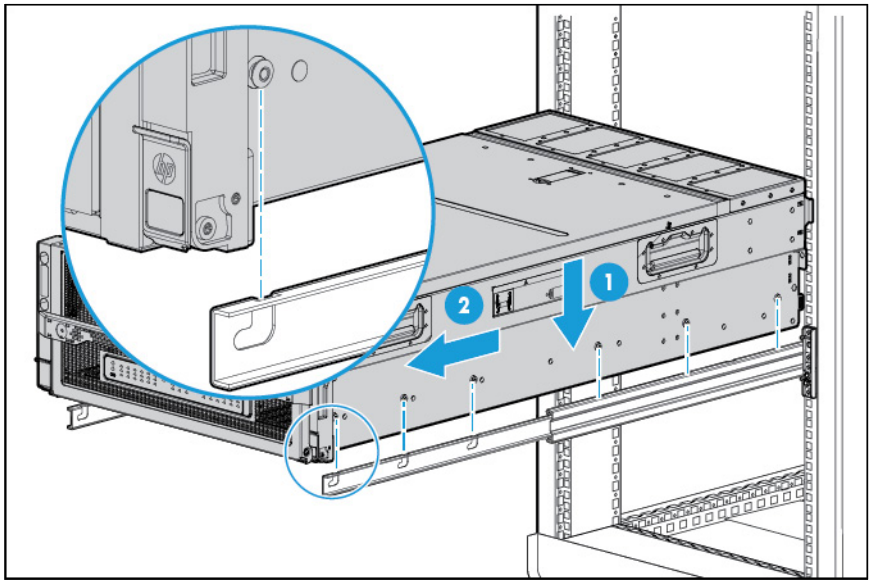
WARNING: The chassis is very heavy. To reduce the risk of personal injury or damage to the equipment:

- Always use either a lift that can handle the load of the product or at least four people to lift and stabilize the product pieces during assembly, installation, or removal, especially when the chassis is not installed in the rack. An additional person may be required to help align the chassis if the chassis is installed higher than chest level.
- Observe local occupational health and safety requirements and guidelines for manual material handling.
- HP recommends removing all installed components from the chassis before installing or moving the chassis.

CAUTION: Be sure to keep the product parallel to the floor when installing the chassis. Tilting the product up or down could result in damage to the rails.

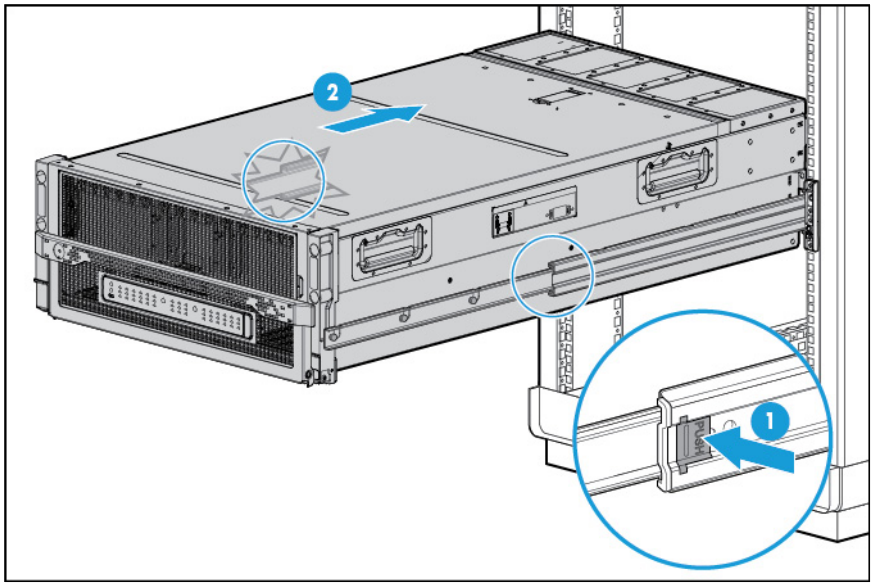


2. Install the chassis into the J-slot on the rails, and then pull it forward.



3. Push in the release lever, and then install the chassis into the rack.

△ **CAUTION:** Press and hold the "Push" tab on each rail until the chassis begins to slide into the rack. Then, release the "Push" tabs and continue to slide the chassis into the rack. Press and hold the "Push" tab on each rail again when the rails lock at a 76.2-cm (30-inch) extension. Then, release the "Push" tabs again and finish sliding the chassis into the rack. Failure to release the "Push" tabs may cause damage to the rails.

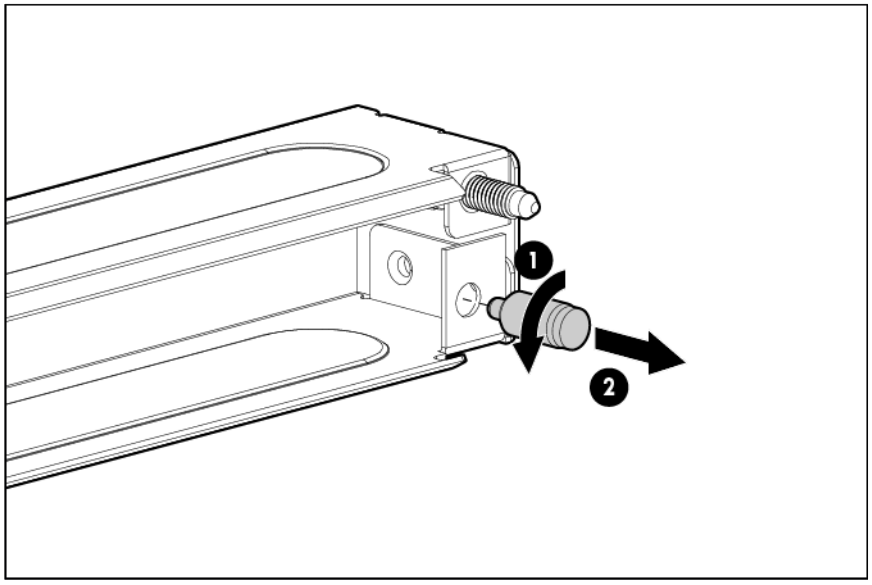


Installing the blanking panel

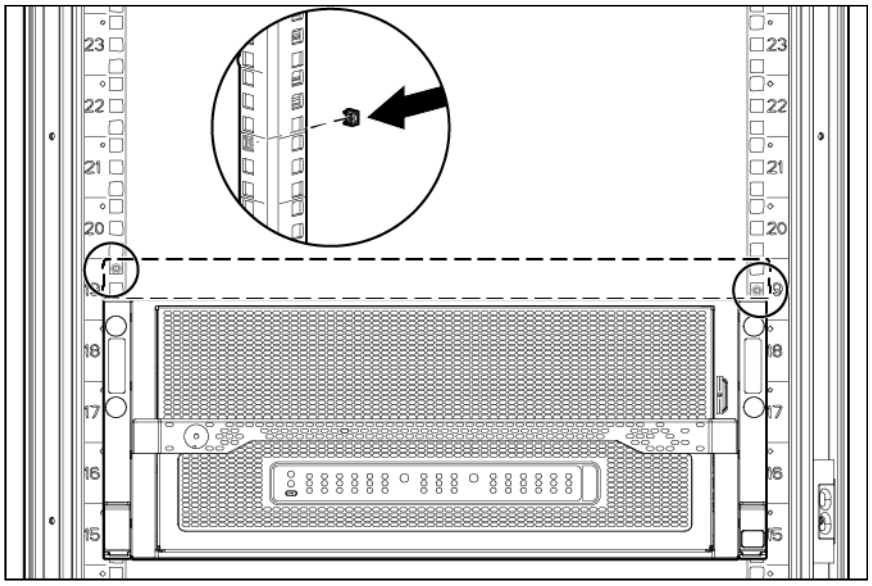
If the rack rail adapter kit is not installed on the rack, always install the blanking panel to ensure proper airflow. The blanking panel is not needed when the rack rail adapter kit is installed.

To install the component:

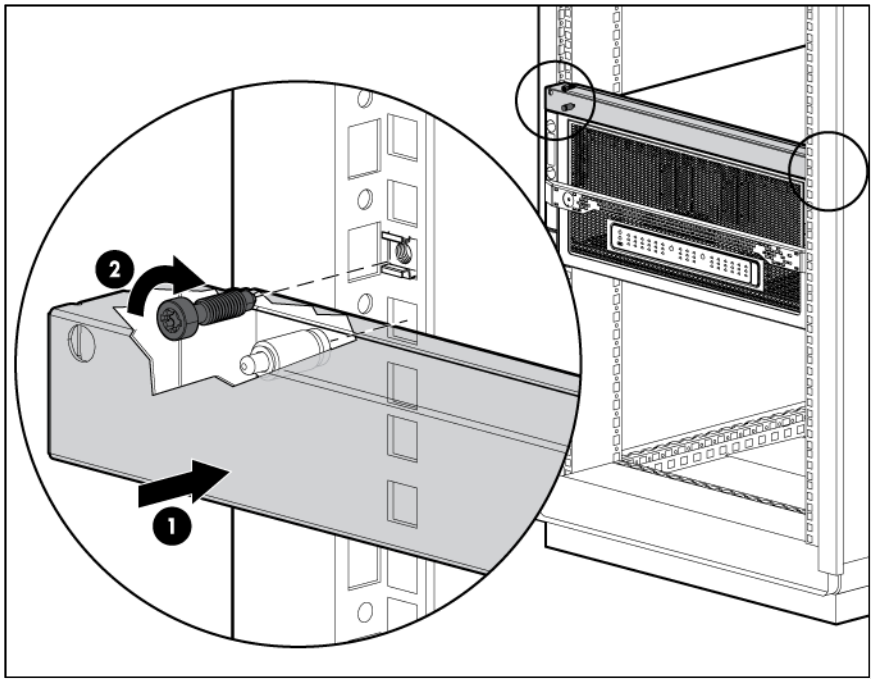
1. For round-hole racks, remove the guide pins and replace them with the guide pins included for round-hole racks.



2. Attach a cage nut to each side of the rack.



3. Align the blanking panel.
4. Secure the blanking panel to the rack.



Installing HP Moonshot System components

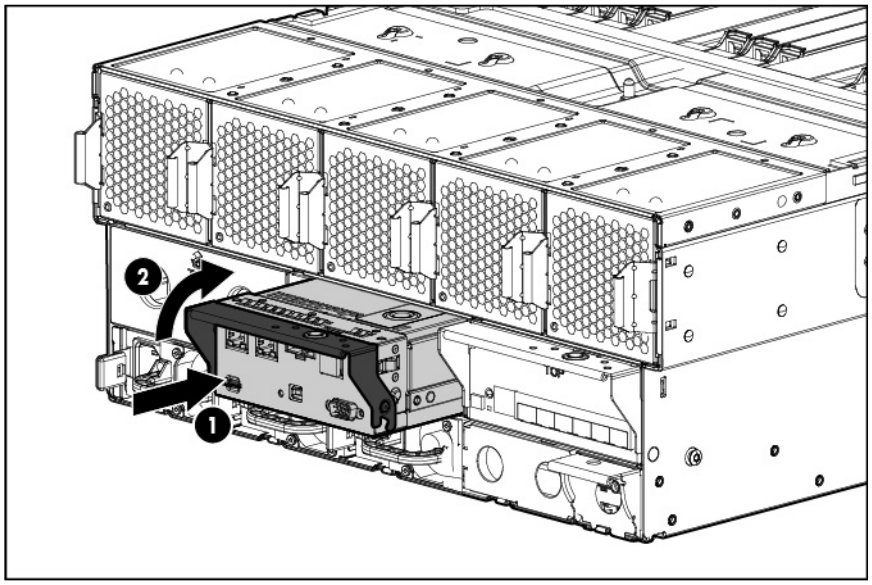
If components were removed during the chassis installation or additional components were ordered, install each device using the procedures in this section.

If you perform any of the procedures in this section after powering on the chassis, ensure proper airflow by ensuring that each bay inside the chassis and at the rear of the chassis is populated with either a component or a blank. For component-specific replacement information, see the *HP Moonshot 1500 Chassis*

Maintenance and Service Guide or cartridge-specific user and maintenance guides in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

Installing the Moonshot 1500 CM module

Install the component as indicated.



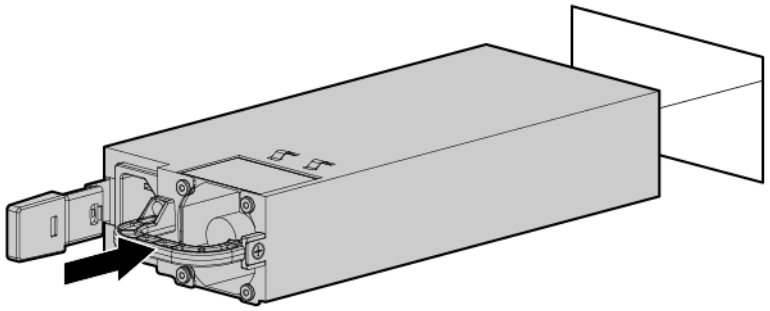
Installing a power supply

WARNING: To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Unplug the power cord from the power supply to disconnect power to the equipment.
- Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the server.

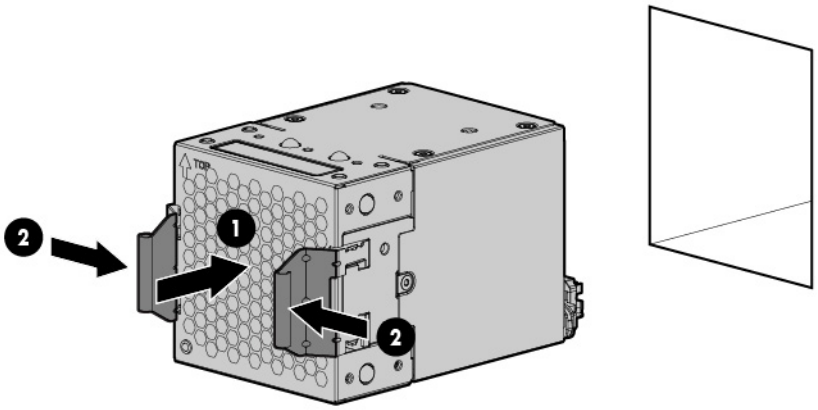
To install the component:

Install the power supply into the device bay, and then press firmly until the power supply is seated.



Installing the fans

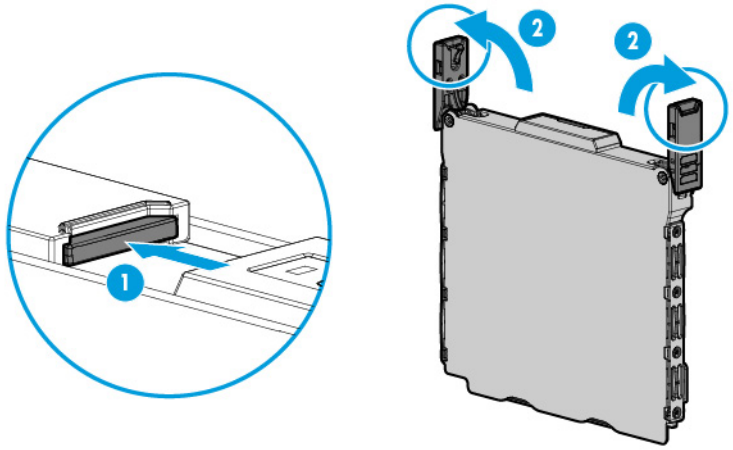
Install the component as indicated.



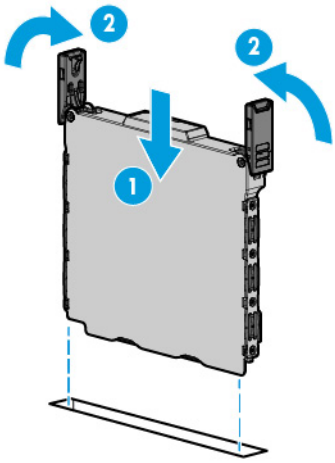
Installing the cartridge

To install the component:

1. Prepare the cartridge.



2. Align and install the cartridge into the chassis.



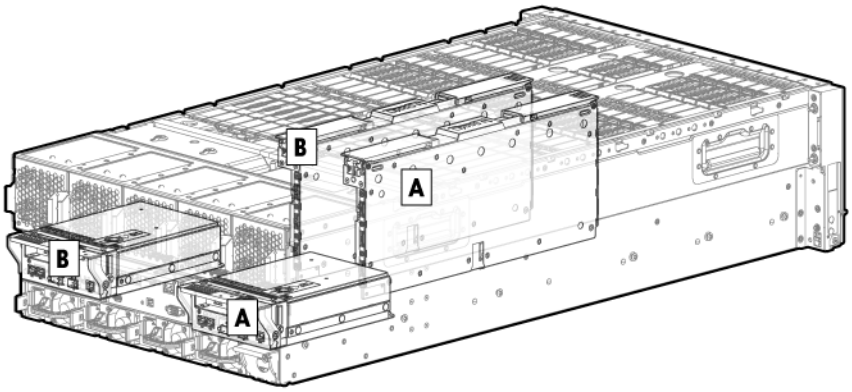
Installing network components

- Switch information and guidelines (on page 29)
- Removing the uplink module blank (on page 32)
- Installing the uplink module (on page 32)
- Installing the switch module (on page 33)

Switch information and guidelines

Before installing the components, review the following guidelines:

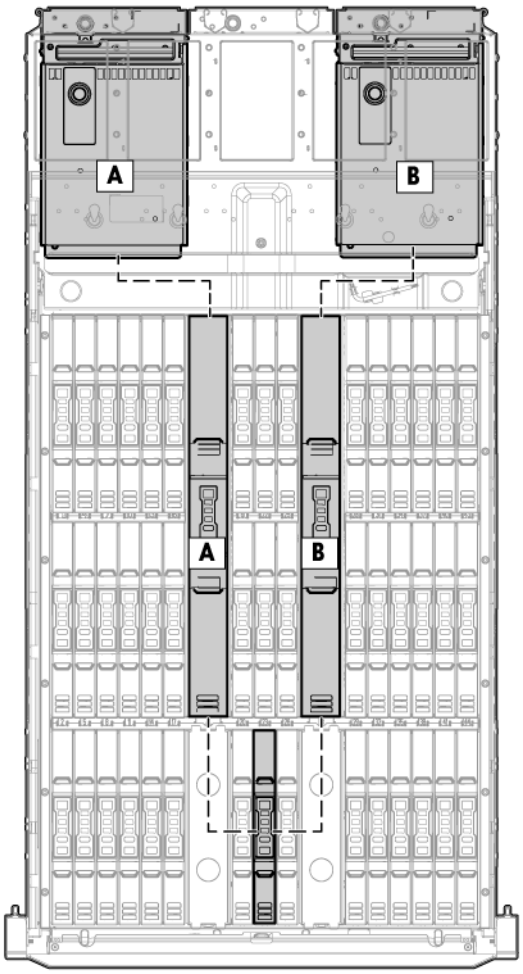
- Always install the switch module and the uplink module in corresponding bays. Both components must be installed for normal operation.



- The switch module and the uplink module can be installed in any order.
- The switch module and the uplink module power down when either module is removed from the chassis.
- The switch module and the uplink module power up after both modules are installed in the chassis.
- Removing any component from bay A or bay B does not disrupt traffic for the other switch assembly.
- For the most current product information, see the release notes in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).
- Always use the HP recommended firmware version.

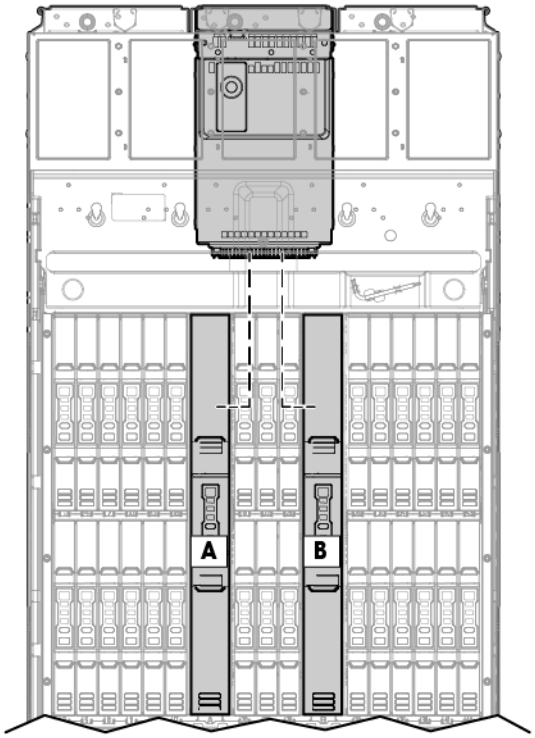
  For more information on HP recommended firmware versions, see the HP Moonshot Component Pack download website (http://www.hp.com/go/moonshot/download).
- The first NIC port discovered by the operating system routes traffic through switch A. The second NIC port discovered by the operating system routes traffic through switch B.

Production network mapping



The first network interface discovered by the operating system routes traffic through switch A. The second network interface discovered by the operating system routes traffic through switch B.

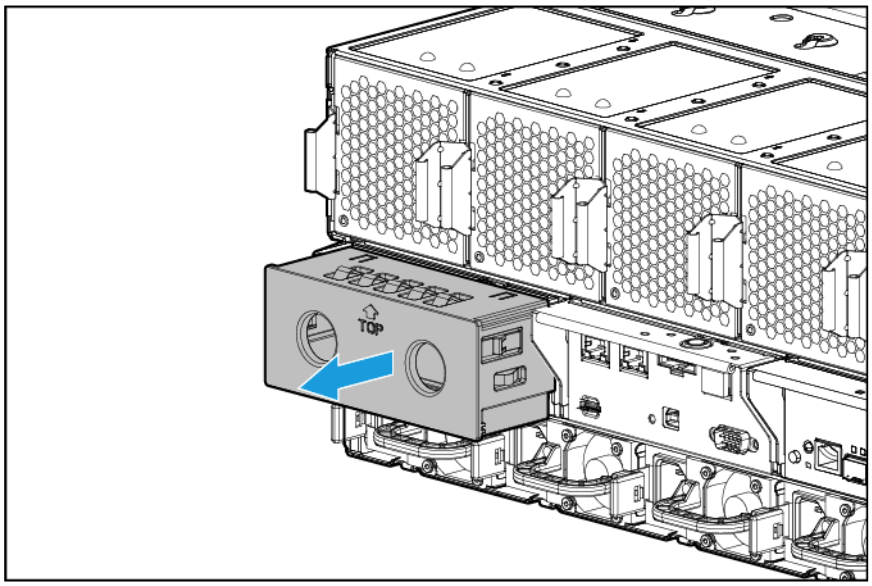
Management network mapping



All traffic from the service port management interface is routed through the iLO CM management port.

Removing the uplink module blank

Remove the component as indicated.



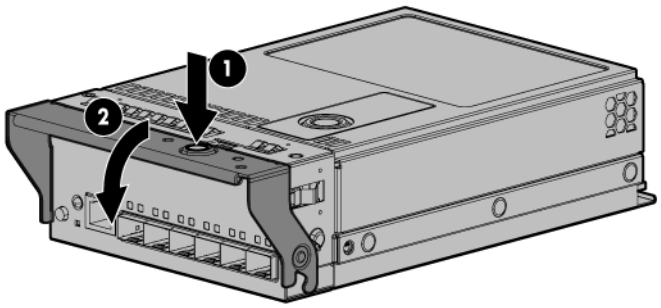
Installing the uplink module

CAUTION: To avoid connectivity loss, do not remove switches already in operation.

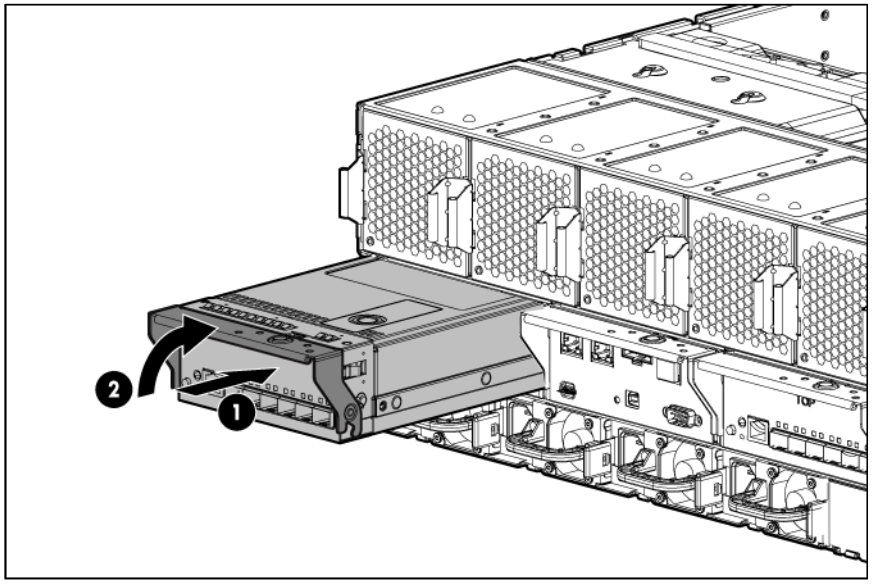
CAUTION: For proper cooling, be sure every switch module bay and uplink module bay has either a blank or a module installed.

To install the component:

1. Remove the uplink module bay blank ("Removing the uplink module blank" on page 32).
2. Prepare the uplink module for installation.



3. Install the uplink module.



4. Do one of the following:
   - If the switch module is already installed, verify the uplink module powers on and the uplink module health LED is green.
   - If the switch module is not installed, install the switch module before verifying LEDs.

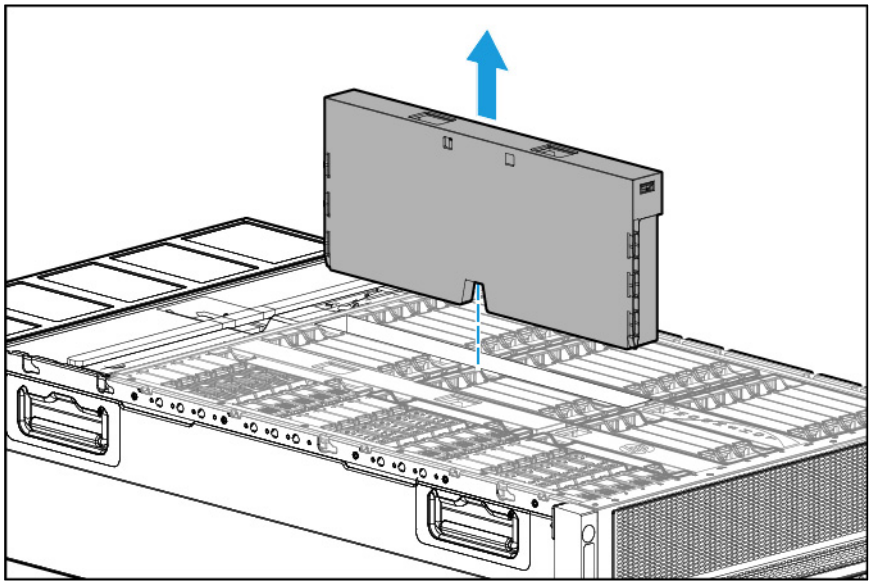
   For more information, see "Switch information and guidelines (on page 29)."
5. After both components have been installed, verify the switch firmware is at the HP recommended firmware version. For more information, see the HP Moonshot Component Pack download website (http://www.hp.com/go/moonshot/download).

Installing the switch module

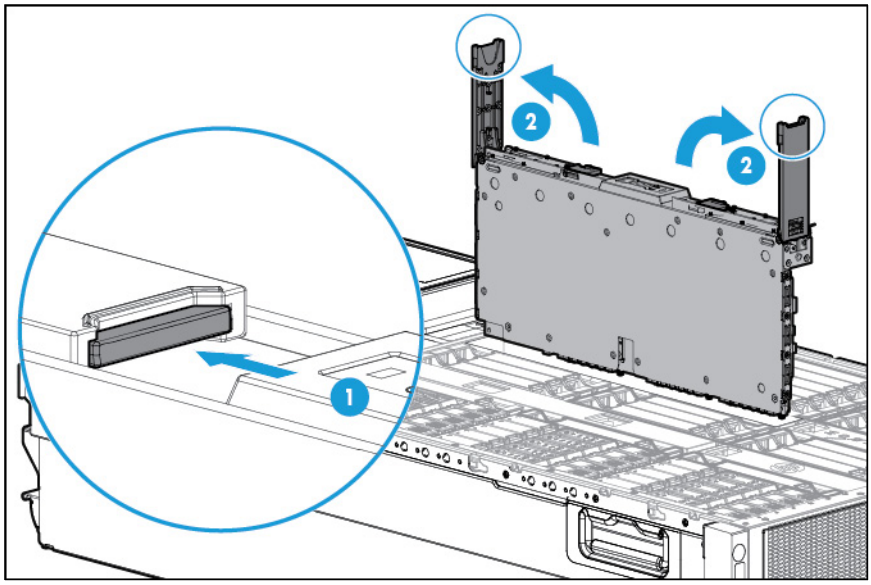
CAUTION: To avoid connectivity loss, do not remove switches already in operation.

To install the component:

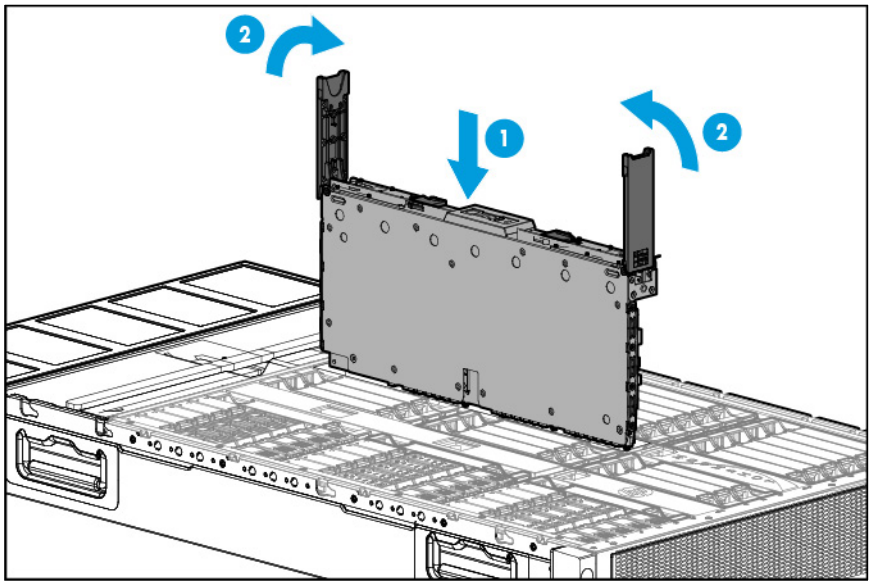
1. Locate the switch module slot, and then remove the blank.



2. Prepare the switch module for installation.



3. Align and install the switch module into the chassis.



4. Do one of the following:
   - If the uplink module is already installed, verify the switch module powers on and the health LED is green.
   - If the uplink module is not installed, install the uplink module before verifying LEDs.

   For more information, see "Switch information and guidelines (on page 29)."
5. Install the access panel, and then return the chassis to the rack.
6. After both components have been installed, verify the switch firmware is at the HP recommended firmware version. For more information, see the HP Moonshot Component Pack download website (http://www.hp.com/go/moonshot/download).

Cabling the HP Moonshot System

Cabling overview

WARNING: To reduce the risk of electric shock or injury due to high-current electrical energy, be sure that all power is completely disconnected at the source before beginning any power connections to the power bus bars or power bus box.

WARNING: Be sure that all circuit breakers are locked in the off position before connecting any power components.

CAUTION: To avoid damaging the fiber cables, do not drape cables from one side of the rack to the other and do not run cables over a hard corner or edge.

After the hardware is installed, complete the following cabling procedures:

1. Connect the Moonshot System to a network ("Connecting the Moonshot System to a network" on page 36).
2. Connect power cables to the chassis ("Connecting power cables and applying power to the chassis" on page 38).
3. Route cables on the cable management arm ("Routing cables on the cable management arm" on page 38).

Connecting the Moonshot System to a network

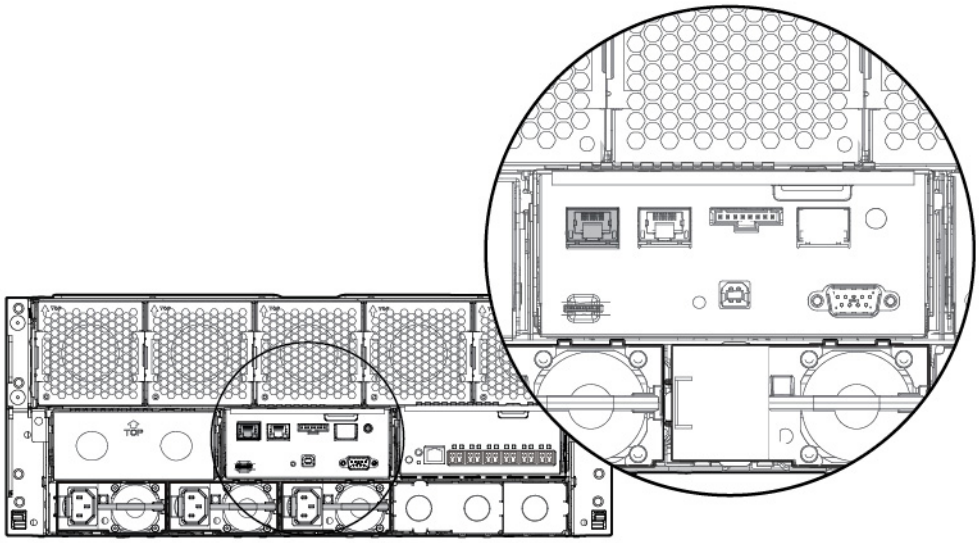
Connect the Moonshot System to the following networks:

- Data center management network (on page 36)
- Data center production network (on page 37)

Data center management network

To connect the chassis to a management network, connect an Ethernet cable from the Moonshot 1500 CM module to the management network. Always connect to the iLO CM management port first. Do not connect both the iLO CM management port and the iLO CM link port to the same network switch. For information about enabling the iLO link port using the `set network daisy` command, see the *HP Moonshot iLO Chassis Management CLI User Guide* in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

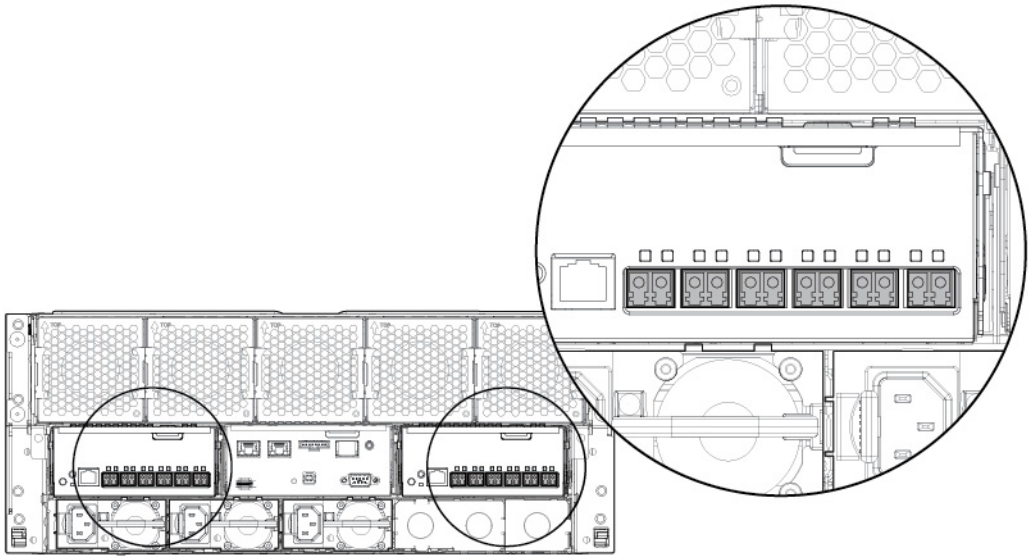
Moonshot iLO CM firmware SSH sessions and switch SSH sessions share connectivity through the iLO CM management port. The iLO CM management port is located on the Moonshot 1500 CM module on the rear of the chassis.



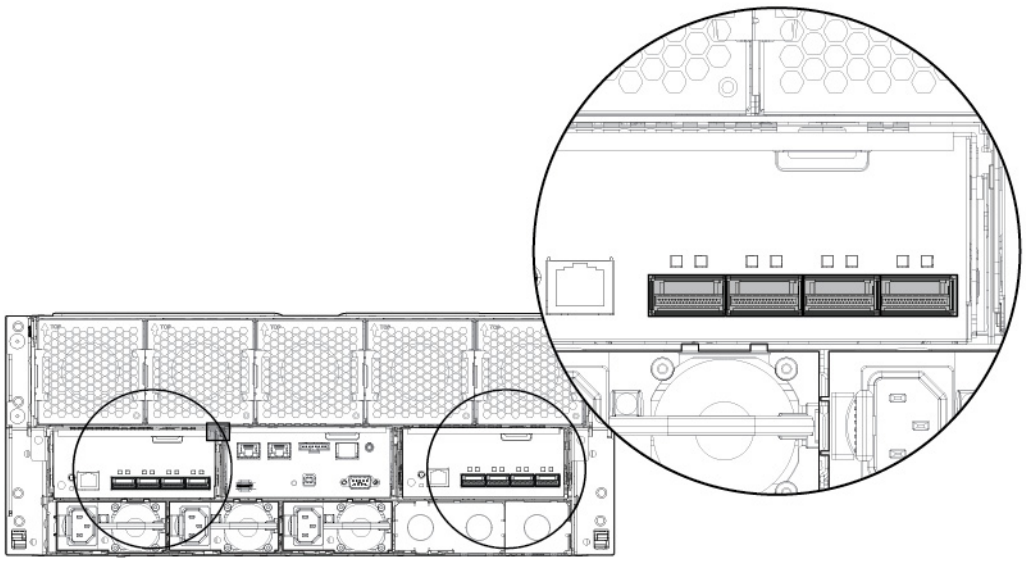
Data center production network

To connect the chassis to a production network, connect to any available SFP+ or QSFP+ port. The SFP+/QSFP+ ports are located on the uplink module installed in the rear of the chassis.

- Moonshot-6SFP Uplink Module



- Moonshot 4QSFP+ Uplink Module



Connecting power cables and applying power to the chassis

1. Connect the power cables to the power supplies.
2. Connect the power cables to the power source (UPS or wall outlet) or to an installed PDU.
3. Wait while the chassis powers on.

Power-on events

The following power-on events occur after applying power to the chassis:

1. Fans begin operating.
2. iLO starts.
3. Front panel LEDs display the status of initializing components:
   - Switches begin initializing.
   - Cartridges begin initializing.
4. iLO runs fan and power tests.

Routing cables on the cable management arm

Route all rear panel cables through the cable management arm.

For more information about the cable management arm, see the *Quick Deploy Rail System Installation Instructions* that ship with the Quick Deploy Rail System kit or in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

Configuring the HP Moonshot System

Chassis configuration overview

To configure the HP Moonshot System, complete the following:

- Configure the chassis (on page 39).
- Configure the switch (on page 41).

Configure the chassis

To configure the Moonshot 1500 chassis, complete the following steps:

1. Connect and configure a terminal for chassis configuration (on page 39).
2. Log in to the iLO CM firmware (on page 40).
3. Obtain the MAC addresses for each cartridge node (on page 40).
4. Configure the iLO CM firmware administrator account password (on page 40).
5. Update the firmware for the HP Moonshot System components (on page 40).

For detailed configuration information, see the following documents in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs):

- *HP Moonshot iLO Chassis Management CLI User Guide*
- *HP Moonshot System Configuration and Compatibility Guide*

Connect and configure a terminal for chassis configuration

To connect and configure a terminal to communicate with the iLO CM firmware:

1. Use a serial cable to connect a PC or terminal to the iLO CM management serial port on the Moonshot 1500 CM module. To locate the iLO CM management serial port, see "HP Moonshot 1500 Chassis Management module components (on page 16)."
2. Configure the terminal with the following settings:
   - 115200 baud rate
   - 8 data bits
   - No parity
   - 1 stop bit
   - No flow control
3. Start the terminal.

Log in to the iLO CM firmware

After the terminal session is started, log in as administrator at the login prompt.

Enter the username:

```
Administrator
```

Enter the password:

```
password
```

Obtain the management IP address

To determine the management IP address for the Moonshot 1500 CM module, log in to the iLO CM firmware while connected to the iLO CM management serial port. At the prompt, enter the following command:

```
show chassis info
```

If DHCP services are unavailable on the management network, configure the IP address and network mask for the Moonshot 1500 CM module. Enter the following commands:

```
set network ip {<ip_address>}
set network mask {<ip_address>}
```

Obtain the MAC addresses for each cartridge node

A MAC address is needed to deploy an operating system to a cartridge node.

To obtain the MAC addresses for each cartridge:

1. Log in to the iLO CM firmware.
2. Obtain MAC addresses:

```
show node macaddr all
```

Configure the iLO CM firmware administrator account password

Log in to the iLO CM firmware and change the administrator account password:

```
set user password [<user name>] [<new password>]
```

Example:

```
set user password Administrator changed_password
```

For more information about password configuration and restrictions, see the *HP Moonshot iLO Chassis Management CLI User Guide* in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

Update the firmware for the HP Moonshot System components

Enter the following command to flash the specified image file from the NAND or URL to the appropriate devices.

```
update firmware {<filename> | <url>}[force] [ <Cx> | sA | sB | all ]
```

When flashing the iLO firmware, a known good copy of the firmware is kept in reserve until the iLO firmware is successfully flashed. When flashing cartridges, the command accepts multiple cartridges in the argument. To flash all cartridges in the chassis, specify `all` in the argument.

Always use the recommended firmware version for all Moonshot System components. For more information on recommended firmware versions, see the HP website (http://www.hp.com/go/moonshot/download).

Updating firmware

HP recommends updating the firmware in the following order:

- iLO CM firmware
- Cartridge firmware
- Switch firmware

For available firmware updates, see the HP website (http://www.hp.com/go/moonshot/download).

Chassis and cartridge firmware

A system ROM flash does not take effect on a node until the node is rebooted. The iLO CM firmware will reflect the system ROM flash immediately.

To update the firmware:

1. Verify the firmware version by entering one of the following commands:
   ```
   show firmware revisions all
   show firmware revisions list
   ```
2. Download the latest firmware version from the HP Moonshot Component Pack download site (http://www.hp.com/go/moonshot/download).
3. After downloading the firmware image, upload all files to the iLO CM firmware repository:
   ```
   add firmware file <source URL>
   ```
4. Verify the images were uploaded successfully:
   ```
   show firmware files
   ```
5. Update the iLO CM firmware or system firmware:
   ```
   update firmware <filename>
   ```
6. Update the cartridge firmware:
   - Single cartridge
   ```
   update firmware <filename> [C<x>]
   ```
   - All cartridges
   ```
   update firmware <filename> all
   ```

For more information on updating the firmware, see the *HP Moonshot iLO Chassis Management CLI User Guide* in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

Configure the switch

To configure the Moonshot switch, complete the following steps:

1. Access the CLI locally (on page 42).
2. Obtain the switch management IP address.
3. Configure the Enable password (on page 42).
4. Update the switch firmware through the switch console ("Update the firmware for the HP Moonshot System components" on page 40).

For detailed configuration information, see the *Switch Administrator's Guide* and *Switch CLI Guide* in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

Access the CLI locally

To access the CLI interface locally:

1. Use a console cable to connect a PC or terminal to the serial console port on the uplink module.
2. Configure the terminal with the following settings:
   - 115200 baud rate
   - 8 data bits
   - No parity
   - 1 stop bit
   - No flow control
3. Start the terminal.

   The switch login prompt appears.
4. Enter: `admin`

   No password is set by default.

Obtain the switch management IP address

To access the switch console remotely, the iLO CM management port must be connected to a network.

If DHCP services are provided on the network, obtain the switch management IP address:

1. Access the switch CLI interface locally.
2. Enter privileged exec mode. At the switch prompt, enter:

   ```
   enable
   ```
3. Show the switch management IP address. At the privileged exec prompt, enter:

   ```
   show serviceport
   ```

If DHCP services are not available, configure the serviceport IP address.

Be sure to configure the enable password before managing the switch remotely.

To configure the switch, see the *Switch Administrator's Guide* and the *Switch CLI Command Reference* in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

Configure the Enable password

The Enable password controls access to the privileged exec mode. The default authentication profile denies remote access to the privileged exec mode if the Enable password is not configured. Configure the Enable password before starting a remote session.

To configure the password:

1. Access the CLI locally (on page 42).
2. To access the privileged exec mode, enter the following command:

   ```
   enable
   ```

   No password prompt appears if a password is not configured.
3. To configure the Enable password, enter the following command:

```
enable password {password}
```

Updating the switch firmware using the switch console

Use TFTP, SFTP, or SCP to update the switch firmware using the switch console.

1. Connect to the switch console.
2. Log in to the switch.
3. Enter privileged exec mode:
   ```
   enable
   ```
4. Verify the version of the current switch image:
   ```
   show bootvar
   ```
5. Verify connectivity by pinging the file server:
   ```
   ping x.x.x.x
   ```
6. Copy the firmware image from the file server to the alternate firmware bank of the switch:
   ```
   copy tftp://x.x.x.x/<path_to_file> alternate
   ```
   If using SFTP or SCP:
   ```
   copy {sftp:|scp:}//username@x.x.x.x/<path_to_file> alternate
   ```
7. Verify the version of the new switch image:
   ```
   show bootvar
   ```
8. Configure the switch to boot from the alternate flash file system:
   ```
   boot system alternate
   ```
9. Reset the switch to boot from the new image:
   ```
   reload
   ```
   Traffic is halted on the associated switch. The switch boots from the alternate flash file system. The image is loaded and runs in the primary flash file system.
10. Verify the firmware update was successful:
    ```
    show bootvar
    ```
11. Update the boot loader on the switch:
    ```
    update bootcode
    ```
12. Update the CPLDs on the switch:

    NOTICE: The CPLD update halts network traffic on the associated switch. Once initiated, do not interrupt the CPLD update. Permanent damage will occur to the switch. CPLD updates may last up to 10 minutes.

    ```
    update cpld
    ```
    The CPLD update reloads the switch and completes when the switch returns to an operational state. If no CPLD update is found, the update is not performed.
13. (Optional) Make a backup of the image:
    ```
    copy primary alternate
    ```
    This step overwrites the previous firmware version. Before committing, be sure no plans exist to downgrade switch firmware.

For more information on updating switch firmware, see the *Switch Module Administrator's Guide* and the *Switch Module CLI Command Reference* in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

Power capping

The HP Moonshot System provides a power capping feature that operates at the chassis level. The capping feature can be activated using the iLO CM firmware that runs on each HP Moonshot 1500 chassis. After a power cap is set for the chassis, all the resident cartridges in the chassis will have the same uniform power cap applied to them until the cap is either modified or canceled.

With HP APM, the enclosure-level power capping feature can be expanded without the need to use the iLO CM firmware. A global power cap can be applied to all chassis with one HP APM command, or different caps can be applied to user-defined groups by using flexible zones within the same rack.

Power capping modes

The HP Moonshot 1500 Chassis supports different power capping modes. The setting impacts how the chassis reacts to changes in power supply functionality, such as loss of input power to a power supply or failure or removal of a power supply from the system. Selecting the appropriate power capping mode depends on system requirements, how the chassis is provisioned, and how power feeds are supplied. The power capping mode alone does not guarantee availability in the event of power loss. The chassis requires at least two power supplies. The type and number of power supplies depends on the cartridges installed in the chassis.

The following power capping modes are standard and are configurable in the power management controller:

- Mode 0: No Redundancy

  All power-capping is disabled. This mode may be used to minimize any possible performance impact of power-capping logic.

- Mode 1: Max Performance with Redundancy

  This is the default power capping mode. This mode allows the maximum number of nodes to run by engaging power-capping if the power draw from the chassis attempts to exceed the load supported by the active power supplies. In this mode, the system is expected to survive an unexpected power loss to one of the power supplies.

- Mode 2: Full AC/DC Redundancy Mode

  Power-capping is enforced such that system has N+1 power redundancy. In this mode, the system should see no performance degradation due to a power supply loss.

Configuring a power cap

To configure power capping for the HP Moonshot System, use the HP Moonshot iLO Chassis Management Firmware. The iLO CM firmware is a single point of access for chassis management for the HP Moonshot 1500 Chassis. For more information, see the *HP Moonshot iLO Chassis Management User Guide* on the HP website (http://www.hp.com/go/moonshot/docs).

Setting the chassis power cap mode using iLO CM firmware

To set the power cap:

1. Log in to the iLO CM firmware (on page 40).
2. Enter the following command to review the current power capacity mode for the chassis:

   ```
   show chassis power
   ```

Example:

```
hpiLO-> show chassis power
Chassis:
#-------
    Power in use: 170 Watts
    Power Capacity: 1818 Watts
    Status: OK
    Powercap Mode: Max Performance with Redundancy
```

3. Enter the following command to set the power capacity mode for the chassis:

```
set chassis powercap mode {0|1|2}
```

Example:

```
hpiLO-> set chassis powercap mode 2
Set powercap mode to Full AC/DC Redundancy Mode
```

Troubleshooting

Troubleshooting resources

The *HP Moonshot System Troubleshooting Guide* provides procedures for resolving common problems and comprehensive courses of action for fault isolation and identification, issue resolution, and software maintenance on the HP Moonshot System. The document is available in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

Regulatory information

Safety and regulatory compliance

For safety, environmental, and regulatory information, see *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at the HP website (http://www.hp.com/support/Safety-Compliance-EnterpriseProducts).

Belarus Kazakhstan Russia marking

Manufacturer

Hewlett-Packard Company, Address: 3000 Hanover Street, Palo Alto, California 94304, U.S.

Local representative information (Russian)

- HP Russia

  ЗАО "Хьюлетт-Паккард А.О.", 125171, Россия, г. Москва, Ленинградское шоссе, 16А, стр.3, тел/факс: +7 (495) 797 35 00, +7 (495) 287 89 05

- HP Belarus

  ИООО «Хьюлетт-Паккард Бел», 220030, Беларусь, г. Минск, ул. Интернациональная, 36-1, офис 722-723, тел.: +375 (17) 392 28 18, факс: +375 (17) 392 28 21

- HP Kazakhstan

  ТОО «Хьюлетт-Паккард (К), 050040, Казахстан, г. Алматы, Бостандыкский район, ул. Тимирязева, 28В, 1 этаж, тел./факс: +7 (727) 355 35 50, +7 (727) 355 35 51

Local representative information (Kazakh)

ЖШС «Хьюлетт-Паккард (К)», Қазақстан, Алматы қ., Бостандық ауданы, Тимирязев к-сі, 28В, тел./факс: +7 (727) 355 35 50, +7 (727) 355 35 51

Manufacturing date

The manufacturing date is defined by the serial number (HP serial number format for this product):
`CCSYWWZZZZ`

Valid date formats include the following:

- `YWW`, where `Y` indicates the year counting from within each new decade, with 2000 as the starting point. For example, 238: 2 for 2002 and 38 for the week of September 9. In addition, 2010 is indicated by 0, 2011 by 1, 2012 by 2, 2013 by 3, and so forth.
- `YYWW`, where `YY` indicates the year, using a base year of 2000. For example, 0238: 02 for 2002 and 38 for the week of September 9.

Turkey RoHS material content declaration

Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur

Ukraine RoHS material content declaration

Обладнання відповідає вимогам Технічного регламенту щодо обмеження використання деяких небезпечних речовин в електричному та електронному обладнанні, затвердженого постановою Кабінету Міністрів України від 3 грудня 2008 № 1057

Warranty information

HP ProLiant and X86 Servers and Options (http://www.hp.com/support/ProLiantServers-Warranties)

HP Enterprise Servers (http://www.hp.com/support/EnterpriseServers-Warranties)

HP Storage Products (http://www.hp.com/support/Storage-Warranties)

HP Networking Products (http://www.hp.com/support/Networking-Warranties)

Communications interference

HP system compliance tests are conducted with HP supported peripheral devices and shielded cables, such as those received with the system. The system meets interference requirements of all countries in which it is sold. These requirements provide reasonable protection against interference with radio and television communications.

Installing and using the system in strict accordance with HP instructions minimizes the chances that the system might cause radio or television interference. However, HP does not guarantee that the system does not interfere with radio and television reception.

Take these precautions:

- Use only shielded cables.
- Install and route the cables according to the instructions provided.
- Ensure that all cable connector screws are firmly tightened.
- Use only HP supported peripheral devices.
- Before system operation, ensure that all panels and cover plates are in place and secure.

Electrostatic discharge

Preventing electrostatic discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Grounding methods to prevent electrostatic discharge

Several methods are used for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ±10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.

For more information on static electricity or assistance with product installation, contact an authorized reseller.

Specifications

Chassis environmental specifications

Specification	Value
Temperature range*	—
Operating	10°C to 35°C (50°F to 95°F)
Non-operating	-30°C to 60°C (-22°F to 140°F)
Maximum Wet bulb temperature	—
Operating	28°C (82.4°F)
Non-operating	38.7°C (101.7°F)
Relative humidity (non-condensing)**	—
Operating	10% to 90%
Non-operating	5% to 95%

* All temperature ratings shown are for sea level. An altitude derating of 1°C per 304.8 m (1.8°F per 1000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed. Upper operating limit is 3,048 m (10,000 ft) or 70 kPa/10.1 psia. Upper non-operating limit is 9,144 m (30,000 ft).
** Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F). Altitude maximum for storage corresponds to a pressure minimum of 70 kPa (10.1 psia).

Chassis specifications

Specification	Value
Height	18.96 cm (7.46 in)
Depth	84.91 cm (33.43 in)
Width	44.33 cm (17.45 in)
Weight, fully loaded	81.65 kg (180.00 lb)
Weight, empty	43.09 kg (95.00 lb)

Support and other resources

Before you contact HP

Be sure to have the following information available before you call HP:

- Technical support registration number (if applicable)
- Product name
- Chassis serial number
- Product identification number
- Applicable error messages
- Operating system type and revision level

To obtain product information, log in to iLO CM firmware and use the `Show Chassis Info` command. For more information, see the *HP Moonshot iLO Chassis Management CLI User Guide* in the HP Moonshot Information Library (http://www.hp.com/go/moonshot/docs).

HP contact information

For United States and worldwide contact information, see the Contact HP website (http://www.hp.com/go/assistance).

In the United States:

- To contact HP by phone, call 1-800-334-5144. For continuous quality improvement, calls may be recorded or monitored.
- If you have purchased a Care Pack (service upgrade), see the Support & Drivers website (http://www8.hp.com/us/en/support-drivers.html). If the problem cannot be resolved at the website, call 1-800-633-3600. For more information about Care Packs, see the HP website (http://pro-aq-sama.houston.hp.com/services/cache/10950-0-0-225-121.html).

Customer Self Repair

HP products are designed with many Customer Self Repair (CSR) parts to minimize repair time and allow for greater flexibility in performing defective parts replacement. If during the diagnosis period HP (or HP service providers or service partners) identifies that the repair can be accomplished by the use of a CSR part, HP will ship that part directly to you for replacement. There are two categories of CSR parts:

- **Mandatory**—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.
- **Optional**—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.

NOTE: Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

Based on availability and where geography permits, CSR parts will be shipped for next business day delivery. Same day or four-hour delivery may be offered at an additional charge where geography permits. If assistance is required, you can call the HP Technical Support Center and a technician will help you over the telephone. HP specifies in the materials shipped with a replacement CSR part whether a defective part must be returned to HP. In cases where it is required to return the defective part to HP, you must ship the defective part back to HP within a defined period of time, normally five (5) business days. The defective part must be returned with the associated documentation in the provided shipping material. Failure to return the defective part may result in HP billing you for the replacement. With a customer self repair, HP will pay all shipping and part return costs and determine the courier/carrier to be used.

For more information about HP's Customer Self Repair program, contact your local service provider. For the North American program, refer to the HP website (http://www.hp.com/go/selfrepair).

Réparation par le client (CSR)

Les produits HP comportent de nombreuses pièces CSR (Customer Self Repair = réparation par le client) afin de minimiser les délais de réparation et faciliter le remplacement des pièces défectueuses. Si pendant la période de diagnostic, HP (ou ses partenaires ou mainteneurs agréés) détermine que la réparation peut être effectuée à l'aide d'une pièce CSR, HP vous l'envoie directement. Il existe deux catégories de pièces CSR:

Obligatoire - Pièces pour lesquelles la réparation par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.

Facultatif - Pièces pour lesquelles la réparation par le client est facultative. Ces pièces sont également conçues pour permettre au client d'effectuer lui-même la réparation. Toutefois, si vous demandez à HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.

REMARQUE: Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP exige que le remplacement de la pièce soit effectué par un Mainteneur Agréé. Ces pièces sont identifiées par la mention "Non" dans le Catalogue illustré.

Les pièces CSR sont livrées le jour ouvré suivant, dans la limite des stocks disponibles et selon votre situation géographique. Si votre situation géographique le permet et que vous demandez une livraison le jour même ou dans les 4 heures, celle-ci vous sera facturée. Pour bénéficier d'une assistance téléphonique, appelez le Centre d'assistance technique HP. Dans les documents envoyés avec la pièce de rechange CSR, HP précise s'il est nécessaire de lui retourner la pièce défectueuse. Si c'est le cas, vous devez le faire dans le délai indiqué, généralement cinq (5) jours ouvrés. La pièce et sa documentation doivent être retournées dans l'emballage fourni. Si vous ne retournez pas la pièce défectueuse, HP se réserve le droit de vous facturer les coûts de remplacement. Dans le cas d'une pièce CSR, HP supporte l'ensemble des frais d'expédition et de retour, et détermine la société de courses ou le transporteur à utiliser.

Pour plus d'informations sur le programme CSR de HP, contactez votre Mainteneur Agrée local. Pour plus d'informations sur ce programme en Amérique du Nord, consultez le site Web HP (http://www.hp.com/go/selfrepair).

Riparazione da parte del cliente

Per abbreviare i tempi di riparazione e garantire una maggiore flessibilità nella sostituzione di parti difettose, i prodotti HP sono realizzati con numerosi componenti che possono essere riparati direttamente dal cliente (CSR, Customer Self Repair). Se in fase di diagnostica HP (o un centro di servizi o di assistenza HP) identifica il guasto come riparabile mediante un ricambio CSR, HP lo spedirà direttamente al cliente per la sostituzione. Vi sono due categorie di parti CSR:

Obbligatorie – Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad HP, deve sostenere le spese di spedizione e di manodopera per il servizio.

Opzionali – Parti la cui riparazione da parte del cliente è facoltativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad HP, potrebbe dover sostenere spese addizionali a seconda del tipo di garanzia previsto per il prodotto.

NOTA: alcuni componenti HP non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, HP richiede che queste parti siano sostituite da un centro di assistenza autorizzato. Tali parti sono identificate da un "No" nel Catalogo illustrato dei componenti.

In base alla disponibilità e alla località geografica, le parti CSR vengono spedite con consegna entro il giorno lavorativo seguente. La consegna nel giorno stesso o entro quattro ore è offerta con un supplemento di costo solo in alcune zone. In caso di necessità si può richiedere l'assistenza telefonica di un addetto del centro di supporto tecnico HP. Nel materiale fornito con una parte di ricambio CSR, HP specifica se il cliente deve restituire dei componenti. Qualora sia richiesta la resa ad HP del componente difettoso, lo si deve spedire ad HP entro un determinato periodo di tempo, generalmente cinque (5) giorni lavorativi. Il componente difettoso deve essere restituito con la documentazione associata nell'imballo di spedizione fornito. La mancata restituzione del componente può comportare la fatturazione del ricambio da parte di HP. Nel caso di riparazione da parte del cliente, HP sostiene tutte le spese di spedizione e resa e sceglie il corriere/vettore da utilizzare.

Per ulteriori informazioni sul programma CSR di HP contattare il centro di assistenza di zona. Per il programma in Nord America fare riferimento al sito Web HP (http://www.hp.com/go/selfrepair).

Customer Self Repair

HP Produkte enthalten viele CSR-Teile (Customer Self Repair), um Reparaturzeiten zu minimieren und höhere Flexibilität beim Austausch defekter Bauteile zu ermöglichen. Wenn HP (oder ein HP Servicepartner) bei der Diagnose feststellt, dass das Produkt mithilfe eines CSR-Teils repariert werden kann, sendet Ihnen HP dieses Bauteil zum Austausch direkt zu. CSR-Teile werden in zwei Kategorien unterteilt:

Zwingend – Teile, für die das Customer Self Repair-Verfahren zwingend vorgegeben ist. Wenn Sie den Austausch dieser Teile von HP vornehmen lassen, werden Ihnen die Anfahrt- und Arbeitskosten für diesen Service berechnet.

Optional – Teile, für die das Customer Self Repair-Verfahren optional ist. Diese Teile sind auch für Customer Self Repair ausgelegt. Wenn Sie jedoch den Austausch dieser Teile von HP vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.

HINWEIS: Einige Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem HP Servicepartner ersetzt werden. Im illustrierten Teilekatalog sind diese Teile mit „No“ bzw. „Nein“ gekennzeichnet.

CSR-Teile werden abhängig von der Verfügbarkeit und vom Lieferziel am folgenden Geschäftstag geliefert. Für bestimmte Standorte ist eine Lieferung am selben Tag oder innerhalb von vier Stunden gegen einen Aufpreis verfügbar. Wenn Sie Hilfe benötigen, können Sie das HP technische Support Center anrufen und sich von einem Mitarbeiter per Telefon helfen lassen. Den Materialien, die mit einem CSR-Ersatzteil geliefert werden, können Sie entnehmen, ob das defekte Teil an HP zurückgeschickt werden muss. Wenn es erforderlich ist, das defekte Teil an HP zurückzuschicken, müssen Sie dies innerhalb eines vorgegebenen Zeitraums tun, in der Regel innerhalb von fünf (5) Geschäftstagen. Das defekte Teil muss mit der zugehörigen Dokumentation in der Verpackung zurückgeschickt werden, die im Lieferumfang enthalten ist. Wenn Sie das defekte Teil nicht zurückschicken, kann HP Ihnen das Ersatzteil in Rechnung stellen. Im Falle von Customer Self Repair kommt HP für alle Kosten für die Lieferung und Rücksendung auf und bestimmt den Kurier-/Frachtdienst.

Weitere Informationen über das HP Customer Self Repair Programm erhalten Sie von Ihrem Servicepartner vor Ort. Informationen über das CSR-Programm in Nordamerika finden Sie auf der HP Website unter (http://www.hp.com/go/selfrepair).

Reparaciones del propio cliente

Los productos de HP incluyen muchos componentes que el propio usuario puede reemplazar (*Customer Self Repair*, CSR) para minimizar el tiempo de reparación y ofrecer una mayor flexibilidad a la hora de realizar sustituciones de componentes defectuosos. Si, durante la fase de diagnóstico, HP (o los proveedores o socios de servicio de HP) identifica que una reparación puede llevarse a cabo mediante el uso de un componente CSR, HP le enviará dicho componente directamente para que realice su sustitución. Los componentes CSR se clasifican en dos categorías:

- **Obligatorio:** componentes para los que la reparación por parte del usuario es obligatoria. Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.
- **Opcional:** componentes para los que la reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que HP realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.

NOTA: Algunos componentes no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, HP pone como condición que un proveedor de servicios autorizado realice la sustitución de estos componentes. Dichos componentes se identifican con la palabra "No" en el catálogo ilustrado de componentes.

Según la disponibilidad y la situación geográfica, los componentes CSR se enviarán para que lleguen a su destino al siguiente día laborable. Si la situación geográfica lo permite, se puede solicitar la entrega en el mismo día o en cuatro horas con un coste adicional. Si precisa asistencia técnica, puede llamar al Centro de asistencia técnica de HP y recibirá ayuda telefónica por parte de un técnico. Con el envío de materiales para la sustitución de componentes CSR, HP especificará si los componentes defectuosos deberán devolverse a HP. En aquellos casos en los que sea necesario devolver algún componente a HP, deberá hacerlo en el periodo de tiempo especificado, normalmente cinco días laborables. Los componentes defectuosos deberán devolverse con toda la documentación relacionada y con el embalaje de envío. Si no enviara el componente defectuoso requerido, HP podrá cobrarle por el de sustitución. En el caso de todas sustituciones que lleve a cabo el cliente, HP se hará cargo de todos los gastos de envío y devolución de componentes y escogerá la empresa de transporte que se utilice para dicho servicio.

Para obtener más información acerca del programa de Reparaciones del propio cliente de HP, póngase en contacto con su proveedor de servicios local. Si está interesado en el programa para Norteamérica, visite la página web de HP siguiente (http://www.hp.com/go/selfrepair).

Customer Self Repair

Veel onderdelen in HP producten zijn door de klant zelf te repareren, waardoor de reparatieduur tot een minimum beperkt kan blijven en de flexibiliteit in het vervangen van defecte onderdelen groter is. Deze onderdelen worden CSR-onderdelen (Customer Self Repair) genoemd. Als HP (of een HP Service Partner) bij de diagnose vaststelt dat de reparatie kan worden uitgevoerd met een CSR-onderdeel, verzendt HP dat onderdeel rechtstreeks naar u, zodat u het defecte onderdeel daarmee kunt vervangen. Er zijn twee categorieën CSR-onderdelen:

Verplicht: Onderdelen waarvoor reparatie door de klant verplicht is. Als u HP verzoekt deze onderdelen voor u te vervangen, worden u voor deze service reiskosten en arbeidsloon in rekening gebracht.

Optioneel: Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.

OPMERKING: Sommige HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

Afhankelijk van de leverbaarheid en de locatie worden CSR-onderdelen verzonden voor levering op de eerstvolgende werkdag. Levering op dezelfde dag of binnen vier uur kan tegen meerkosten worden aangeboden, indien dit mogelijk is gezien de locatie. Indien assistentie gewenst is, belt u een HP Service Partner om via de telefoon technische ondersteuning te ontvangen. HP vermeldt in de documentatie bij het vervangende CSR-onderdeel of het defecte onderdeel aan HP moet worden geretourneerd. Als het defecte onderdeel aan HP moet worden teruggezonden, moet u het defecte onderdeel binnen een bepaalde periode, gewoonlijk vijf (5) werkdagen, retourneren aan HP. Het defecte onderdeel moet met de bijbehorende documentatie worden geretourneerd in het meegeleverde verpakkingsmateriaal. Als u het defecte onderdeel niet terugzendt, kan HP u voor het vervangende onderdeel kosten in rekening brengen. Bij reparatie door de klant betaalt HP alle verzendkosten voor het vervangende en geretourneerde onderdeel en kiest HP zelf welke koerier/transportonderneming hiervoor wordt gebruikt.

Neem contact op met een Service Partner voor meer informatie over het Customer Self Repair programma van HP. Informatie over Service Partners vindt u op de HP website (http://www.hp.com/go/selfrepair).

Reparo feito pelo cliente

Os produtos da HP são projetados com muitas peças para reparo feito pelo cliente (CSR) de modo a minimizar o tempo de reparo e permitir maior flexibilidade na substituição de peças com defeito. Se, durante o período de diagnóstico, a HP (ou fornecedores/parceiros de serviço da HP) concluir que o reparo pode ser efetuado pelo uso de uma peça CSR, a peça de reposição será enviada diretamente ao cliente. Existem duas categorias de peças CSR:

Obrigatória – Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.

Opcional – Peças cujo reparo feito pelo cliente é opcional. Essas peças também são projetadas para o reparo feito pelo cliente. No entanto, se desejar que a HP as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.

OBSERVAÇÃO: Algumas peças da HP não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a HP exige que um técnico autorizado substitua a peça. Essas peças estão identificadas com a marca "No" (Não), no catálogo de peças ilustrado.

Conforme a disponibilidade e o local geográfico, as peças CSR serão enviadas no primeiro dia útil após o pedido. Onde as condições geográficas permitirem, a entrega no mesmo dia ou em quatro horas pode ser feita mediante uma taxa adicional. Se precisar de auxílio, entre em contato com o Centro de suporte técnico da HP para que um técnico o ajude por telefone. A HP especifica nos materiais fornecidos com a peça CSR de reposição se a peça com defeito deve ser devolvida à HP. Nos casos em que isso for necessário, é preciso enviar a peça com defeito à HP dentro do período determinado, normalmente cinco (5) dias úteis. A peça com defeito deve ser enviada com a documentação correspondente no material de transporte fornecido. Caso não o faça, a HP poderá cobrar a reposição. Para as peças de reparo feito pelo cliente, a HP paga todas as despesas de transporte e de devolução da peça e determina a transportadora/serviço postal a ser utilizado.

Para obter mais informações sobre o programa de reparo feito pelo cliente da HP, entre em contato com o fornecedor de serviços local. Para o programa norte-americano, visite o site da HP (http://www.hp.com/go/selfrepair).

カスタマーセルフリペア

修理時間を短縮し、故障部品の交換における高い柔軟性を確保するために、HP製品には多数のCSR部品があります。診断の際に、CSR部品を使用すれば修理ができるとHP（HPまたはHP正規保守代理店）が判断した場合、HPはその部品を直接、お客様に発送し、お客様に交換していただきます。CSR部品には以下の2通りがあります。

- **必須 -** カスタマーセルフリペアが必須の部品。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。
- **任意 -** カスタマーセルフリペアが任意である部品。この部品もカスタマーセルフリペア用です。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、別途費用を負担していただくことなく保証サービスを受けることができます。

注： HP製品の一部の部品は、カスタマーセルフリペア用ではありません。製品の保証を継続するためには、HPまたはHP正規保守代理店による交換作業が必須となります。部品カタログには、当該部品がカスタマーセルフリペア除外品である旨が記載されています。

部品供給が可能な場合、地域によっては、CSR部品を翌営業日に届くように発送します。また、地域によっては、追加費用を負担いただくことにより同日または4時間以内に届くように発送することも可能な場合があります。サポートが必要なときは、HPの修理受付窓口に電話していただければ、技術者が電話でアドバイスします。交換用のCSR部品または同梱物には、故障部品をHPに返送する必要があるかどうかが表示されています。故障部品をHPに返送する必要がある場合は、指定期限内（通常は5営業日以内）に故障部品をHPに返送してください。故障部品を返送する場合は、届いた時の梱包箱に関連書類とともに入れてください。故障部品を返送しない場合、HPから部品費用が請求されます。カスタマーセルフリペアの際には、HPは送料および部品返送費を全額負担し、使用する宅配便会社や運送会社を指定します。

客户自行维修

HP 产品提供许多客户自行维修 (CSR) 部件，以尽可能缩短维修时间和在更换缺陷部件方面提供更大的灵活性。如果在诊断期间 HP（或 HP 服务提供商或服务合作伙伴）确定可以通过使用 CSR 部件完成维修，HP 将直接把该部件发送给您进行更换。有两类 CSR 部件：

- **强制性的** — 要求客户必须自行维修的部件。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。
- **可选的** — 客户可以选择是否自行维修的部件。这些部件也是为客户自行维修设计的。不过，如果您要求 HP 为您更换这些部件，则根据为您的产品指定的保修服务类型，HP 可能收取或不再收取任何附加费用。

注：某些 HP 部件的设计并未考虑客户自行维修。为了满足客户保修的需要，HP 要求授权服务提供商更换相关部件。这些部件在部件图解目录中标记为“否”。

CSR 部件将在下一个工作日发运（取决于备货情况和允许的地理范围）。在允许的地理范围内，可在当天或四小时内发运，但要收取额外费用。如果需要帮助，您可以致电 HP 技术支持中心，将会有技术人员通过电话为您提供帮助。HP 会在随更换的 CSR 部件发运的材料中指明是否必须将有缺陷的部件返还给 HP。如果要求您将有缺陷的部件返还给 HP，那么您必须在规定期限内（通常是五 (5) 个工作日）将缺陷部件发给 HP。有缺陷的部件必须随所提供的发运材料中的相关文件一起返还。如果未能送还有缺陷的部件，HP 可能会要求您支付更换费用。客户自行维修时，HP 将承担所有相关运输和部件返回费用，并指定快递商/承运商。

有关 HP 客户自行维修计划的详细信息，请与您当地的服务提供商联系。有关北美地区的计划，请访问 HP 网站 (http://www.hp.com/go/selfrepair)。

客戶自行維修

HP 產品設計了許多「客戶自行維修」(CSR) 的零件以減少維修時間，並且使得更換瑕疵零件時能有更大的彈性。如果在診斷期間 HP（或 HP 服務供應商或維修夥伴）辨認出此項維修工作可以藉由使用 CSR 零件來完成，則 HP 將直接寄送該零件給您作更換。CSR 零件分為兩種類別：

- **強制的** — 客戶自行維修所使用的零件是強制性的。如果您要求 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。
- **選購的** — 客戶自行維修所使用的零件是選購的。這些零件也設計用於客戶自行維修之用。不過，如果您要求 HP 為您更換，則可能需要也可能不需要負擔額外的費用，端視針對此產品指定的保固服務類型而定。

備註：某些 HP 零件沒有消費者可自行維修的設計。為符合客戶保固，HP 需要授權的服務供應商更換零件。這些零件在圖示的零件目錄中，被標示為「否」。

基於材料取得及環境允許的情況下，CSR 零件將於下一個工作日以快遞寄送。在環境的允許下當天或四小時內送達，則可能需要額外的費用。若您需要協助，可致電「HP 技術支援中心」，會有一位技術人員透過電話來協助您。不論損壞的零件是否必須退回，HP 皆會在與 CSR 替換零件一起運送的材料中註明。若要將損壞的零件退回 HP，您必須在指定的一段時間內（通常為五 (5) 個工作天），將損壞的零件寄回 HP。損壞的零件必須與寄送資料中隨附的相關技術文件一併退還。如果無法退還損壞的零件，HP 可能要向您收取替換費用。針對客戶自行維修情形，HP 將負責所有運費及零件退還費用並指定使用何家快遞/貨運公司。

如需 HP 的「客戶自行維修」方案詳細資訊，請連絡您當地的服務供應商。至於北美方案，請參閱 HP 網站 (http://www.hp.com/go/selfrepair)。

고객 셀프 수리

HP 제품은 수리 시간을 최소화하고 결함이 있는 부품 교체 시 더욱 융통성을 발휘할 수 있도록 하기 위해 고객 셀프 수리(CSR) 부품을 다량 사용하여 설계되었습니다. 진단 기간 동안 HP(또는 HP 서비스 공급업체 또는 서비스 협력업체)에서 CSR 부품을 사용하여 수리가 가능하다고 판단되면 HP는 해당 부품을 바로 사용자에게 보내어 사용자가 교체할 수 있도록 합니다. CSR 부품에는 두 가지 종류가 있습니다.

- **고객 셀프 수리가 의무 사항인 필수 부품.** 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.
- **고객 셀프 수리가 선택 사항인 부품.** 이 부품들도 고객 셀프 수리가 가능하도록 설계되었습니다. 하지만 사용자가 HP에 이 부품의 교체를 요청할 경우 사용자가 구입한 제품에 해당하는 보증 서비스 유형에 따라 추가 비용 없이 교체가 가능할 수 있습니다.

참고: 일부 HP 부품은 고객 셀프 수리가 불가능하도록 설계되었습니다. HP는 만족스러운 고객 보증을 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 하고 있습니다. 이러한 부품들은 Illustrated Parts Catalog에 "No"라고 표시되어 있습니다.

CSR 부품은 재고 상태와 지리적 조건이 허용하는 경우 다음 영업일 납품이 가능하도록 배송이 이루어집니다. 지리적 조건이 허용하는 경우 추가 비용이 청구되는 조건으로 당일 또는 4시간 배송이 가능할 수도 있습니다. 도움이 필요하시면 HP 기술 지원 센터로 전화하십시오. 전문 기술자가 전화로 도움을 줄 것입니다. HP는 결함이 발생한 부품을 HP로 반환해야 하는지 여부를 CSR 교체 부품과 함께 배송된 자료에 지정합니다. 결함이 발생한 부품을 HP로 반환해야 하는 경우에는 지정된 기간 내(통상 영업일 기준 5일)에 HP로 반환해야 합니다. 이 때 결함이 발생한 부품은 제공된 포장 재료에 넣어 관련 설명서와 함께 반환해야 합니다. 결함이 발생한 부품을 반환하지 않는 경우 HP가 교체 부품에 대해 비용을 청구할 수 있습니다. 고객 셀프 수리의 경우, HP는 모든 운송 및 부품 반환 비용을 부담하며 이용할 운송업체 및 택배 서비스를 결정합니다.

HP 고객 셀프 수리 프로그램에 대한 자세한 내용은 가까운 서비스 제공업체에 문의하십시오. 북미 지역의 프로그램에 대해서는 HP 웹 사이트(http://www.hp.com/go/selfrepair)를 참조하십시오.

Acronyms and abbreviations

CM

chassis management

CPLD

complex programmable logic device

DHCP

Dynamic Host Configuration Protocol

HP APM

HP Advanced Power Manager

iLO

Integrated Lights-Out

PDU

power distribution unit

QSFP+

enhanced quad small form-factor pluggable

SCP

Secure Copy Protocol

SFP

small form-factor pluggable

SFP+

enhanced small form-factor pluggable

SFTP

Secure File Transfer Protocol

SSH

Secure Shell

TFTP

Trivial File Transfer Protocol

UPS

uninterruptible power system

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